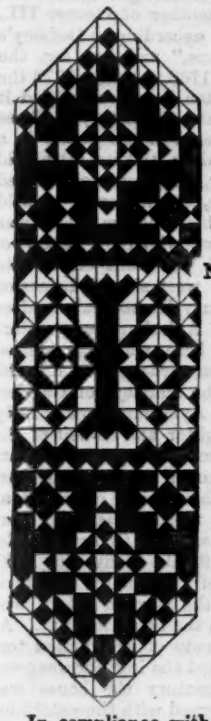
The Builder.

VOL. XXXI.—No. 1566.



Proposed Cathedral Church of St. Mary, Edinburgh: Principles of Design.

IN our present number we give a view of the design submitted by Sir G. G. Scott for the proposed cathedral church to be erected in Edinburgh, and which was selected, when in competition with others, by the Trustees.

In the observations that accompanied the design, the architect has explained the principles which guided him, and has produced so interesting a document that we are led to print it entire:—

In compliance with your invitation, I submit for your examination the designs I have prepared for your proposed cathedral church of St. Mary, at Edinburgh.

In designing a church which is to take the rank of a cathedral, and that in the metropolis of Scotland, and which must, nevertheless, be capable of being erected for a moderate sum, one has to consider carefully what are the architectural, and what the ritual, essentials of a cathedral, as distinguished from a church of less dignified rank.

It would not be easy to define the essential differences found to exist among ancient churches between a cathedral and an abbey, or even a great collegiate church. The latter were often promoted to the higher dignity, and were found in every way fitted for it. Our own question, however, lies between a cathedral and a parochial church; and even here it is not so easy as it might appear to define the difference, inasmuch as many large parish churches equal, and even exceed, in scale and dignity of aspect cathedrals of the smaller size. In the present instance even, the proposed dimensions of the cathedral are equalled by those of some parochial churches, and in some instances the ritual arrangements of such churches may also be on a nearly equal scale.

Our aim, then, must, I think, be *positive* rather than *relative*. The church must, both within and without, bear such unmistakable credentials of high dignity as to be obviously suited to its rank as the chief church of the diocese, and that which its chief pastor adopts as more especially its own; and perhaps the great essential is that the choir should be of such ample dimensions as to allow the diocesan clergy, from time to time, to assemble there in the presence of their bishop.

There are, however, no universal rules for the form of a church of cathedral rank. If we were to say that it should have a *central tower*, it would at once occur to every one that many abroad and several in Great Britain have not that feature. If we were to moderate this demand, and say that it should, at least, be *cruciform*, it would be replied that we have in Britain at least two,—*Dunblane and Llandaff*,—which are not so; and so on: no feature can be named which is the special and unvarying characteristic of a cathedral. All, then, which can be demanded for it is that it should be as dignified a church as the circumstances at command will permit, and that it shall, as a rule, be the noblest church in the city and diocese in which it is placed.

Although, however, a cruciform plan and a central tower are not indispensable characteristics, it must be admitted that both are in a high degree conducive to dignity of aspect, and are consequently most desirable features in a cathedral church. No plan is so noble or so impressive as that which is founded on the cross, and the cross plan is never so emphatic as when a central tower crowns its intersection.

I have therefore chosen as my [more normal] design the customary and typical form of a cruciform church, with a central tower, only making the central crossing, with the nave and transepts, unusually wide in their proportions, so as best to provide for congregational purposes, and so constructing and planning the supporting piers of the tower as to offer the least practicable amount of obstruction to view and voice.

I have in this design given *aisles* on *either* side to the transepts as well as to the other arms of the cross, which tends to produce a great amount of space in the part most useful to the congregation. As, however, you appear to lay special stress on this point, I have considered other methods of providing for it.

Had I been called in without being subjected to the ordeal of competition, I should have laid before you several methods of arrangement for your consideration and choice, giving you my views upon each. Competition, however, is attended with this great practical evil, that it interferes with that power of confidentially laying the whole case before you, which is customary when an architect of known experience is called in at once as your selected adviser.

There are at least *three* schemes which I ought to submit for your consideration, but your conditions would appear to demand that, if I should lay each before you, I should accompany each by the great list of drawings which you demand,—a labour which would exceed my command of time. I have, however, ventured on one alternative scheme, for which a very few drawings would have sufficed; but, out of conformity with your terms, I have treated it as a distinct design rather than a mere variety, and given it a complete set of drawings of its own.

This design, distinguished as Design B, is founded on the celebrated alteration made by Alan de Walsingham in the Cathedral of Ely, where, on the fall of the central tower, he omitted to rebuild the four great piers which had supported it, but,—stepping onwards to the next in every direction,—converted his central space into a vast octagon. This plan, though less dignified in external aspect, has very great practical advantages as regards the actual uses of the church through its affording a great and unobstructed space in front both of the choir and the pulpit for the congregation.

In neither design, however, have I introduced a lantern rising high above the general elevation of the interior,—that being injurious to the acoustic qualities of the church; and, with the same view, I have shown all parts of the roof as vaulted either with stone or wood,—*i.e.*, the choir and the aisles with stone, the nave, crossing, and transepts with wood; the latter being particularly favourable to sound.

In my design B I have, to avoid undue length, shown the choir as projecting a certain distance into the central octagon, an arrangement very favourable to acoustic objects; but, lest this should not find favour, I have, by a fly-leaf, shown an extension of the choir which would keep it wholly within the eastern arm of the cross.

Could I have afforded time for the preparation of a third design, it would have had a central tower, with a shortened eastern arm, the choral arrangements extending westward into the crossing. The nave would have been widened for congregational objects, and the organ placed in one transept. The aisles of the nave in the two bays next to the transept would have been extended in width to provide for more persons near to the pulpit, &c. I do not, however, like this plan so well as the two which I have worked out.

In my design B, as I could not have a central tower, I found that I must either place the tower in some irregular position, which seemed hardly to suit the site, or I must have a façade with two towers. Were this, however, as is most usual, at the west end, it would be attended with the disadvantage of placing the best façade towards the less-frequented quarter. I have, therefore, so far deviated from custom as to make my twin steeples to flank the eastern instead of the western front, so as to be seen centrally as you approach through Melville-street.

This arrangement, though less customary, is not contrary to precedent, as many old churches on the Continent have their twin towers both at the east and the west, and some even to the transepts.

If, however, a western façade be preferred, you will easily imagine the change, by fancying the lower windows of the east end omitted, and a portal introduced in their stead, or, rather, by imagining the central portion of the west front substituted for that shown between the towers in what is now the eastern elevation.*

Returning to the internal arrangement, I will mention, that I have not ventured to show a high choir-screen, fearing that objections may be felt to it, but have shown a low screen or septum, like those at Florence, Monreale, &c. I should, however, as a matter of taste, rejoice to substitute the higher form of screen. Nor have I shown close screens or canopies on the sides of the choir because they render the choir aisles unavailable except for passages.

I have provided for the organ in this manner: The lighter parts, especially the "choir organ," with the keys and the organist's seat, I have placed close to the first bay on the north of the choir; but the larger and more cumbrous parts I have placed in the eastern aisle of the north transept, immediately behind, a place where the sound would spread itself freely through both choir, transepts, crossing, and nave. The communication would be by trackers passing beneath the floor of the aisle. There is, however, the possible alternative of placing the organist and the choir organ, &c., as already mentioned, but placing the heavy parts in the triforium of the choir and transept.

The arrangements of the choir will speak for themselves.

The seating of the nave, &c., would be by means of chairs.

The question you have suggested as to the place for the congregation during ordinary daily services as distinguished from their place on greater occasions, I have carefully considered, but do not see any necessity (but the contrary) for providing a distinct position.

It would seem to me a great pity that the services on minor, though the most frequent, occasions should be in a less dignified place than at other times. It is an arrangement not known in this country, excepting for early services; nor do I think it desirable.

The question whether, at ordinary week-day services any part of the congregation should be admitted within the choir, seems one which should be left to the decision of the bishop and clergy. It is not essential to the arrangement to decide it while planning the cathedral, as, if not so admitted, they would simply occupy the space in front of the choir-screen, according to their numbers.

Though the choir of a parochial church should be so planned as to hold no more than the clerical and choral bodies, that of a cathedral should do more,—it should be capable of containing in addition so many at least of the diocesan clergy as are likely, on any great diocesan occasion, to assemble.

This renders the choir somewhat larger than would on ordinary occasions be needed. I would not by any means, on Sundays or on festivals, allow this excess of room to be occupied by the congregation; but whether the rule should be so severe at ordinary daily service is a question I would not take upon myself to decide.

In both designs I have placed the chapter-house near the north-eastern angle, approached by a cloister-like passage. I have not provided it with stone seats, thinking it improbable that they would be used. Its design is really a square, but by a peculiar treatment, partakes also of the octagon, making, as I think, a pleasing and picturesque variety from the accustomed forms.

I have provided several vestries, *e. g.*, for the bishop, the clergy, and the choir.

In selecting the variety of architecture on which to found my design, I have met with some little difficulty. I desired that it should not, at the least, be discordant with the finest of the Scottish examples; but here we have an *embarras de richesses*; for we find in Scotland noble examples of nearly every period. Putting aside the Norman, we have glorious examples of the

* This second design did not go before the trustees, a question having arisen as to how far it was or was not consistent with the programme.

Transitional style, as at Kelso, Jedburgh, St. Andrew's, parts of Holyrood, &c. We have the developed Early Pointed, as in the greater part of Holyrood, the whole of Glasgow, Elgin, and many other grand examples; the earlier Decorated, as at Dunblane, Sweetheart Abbey, &c., and the later styles in very many others.

I have myself, however, been most impressed by the earlier phase of the Early Pointed, a style which especially unites the architecture of Scotland with that of the North of England, and is one capable, as I think, of the greatest possible degree of dignity united with a reasonable amount of simplicity and any amount of beauty. It always strikes me as more noble than the more developed Early Pointed, while it is both more simple and far more dignified than any variety of the Decorated style. The north aisle at Holyrood is a fine example of it, as are many parts of Jedburgh and most of St. Andrew's Cathedral. In England one of its finest examples is in a border county. I refer to the exquisite sanctuary of Tynemouth Priory, which unites the severe dignity of the Transition with the richness of the developed Early Pointed. On this variety, then, I have founded my design. In no other, whether in Scotland, England, or Wales, do we find nobler composition more carefully-studied detail, or a closer union of simplicity with architectural beauty. But the style of St. Andrew's, Glastonbury, and St. David's, needs no apology from any British architect.

In following this style, however, I have avoided merely transitional features, such especially as the round arch, and have made my style purely and strictly Pointed, though, as at Jedburgh, I have not scrupled to introduce here and there ornamental details which retain reminiscences of the Norman. No one who is acquainted with the western portal and the little cloister doorway at Jedburgh,—two of the most exquisite gems of architectural art in this island,—will find fault with this.

In placing the church upon the ground, I should be disposed to make the axis coincide with that of Melville-street, so that the eastern part, with the central or the flanking towers (as the case may be), may be well seen down that street. Its western façade would, in a similar manner, be seen from Grosvenor-crescent.

As I presume that several ecclesiastical residences will be needed, I should suggest that one should be placed a little back from the south-eastern and south-western angles of the ground and the others picturesquely distributed about the northern end of the ground in which place also should stand the episcopal residence.

I should most unquestionably retain East Coates House.

In a part of Edinburgh so essentially new, it is a most happy circumstance to possess upon the cathedral site a veritable old Scottish building. It is very picturesque in its design, and will become more so by careful restoration. Its internal accommodation is open to improvement, and I have no doubt that by judicious treatment it may be made a comfortable residence, while its presence will add much to the picturesque grouping of the ecclesiastical buildings.

I intend the building to be wholly of stone; I reserve the power to make a careful selection of stone for the different works, should I be intrusted with the work, according to the position of the different parts and also with reference to cost. My present impressions are in favour of Dalmeny stone for the external wrought work; Hales, Cragleith, and Redhall stone for rough walling and plain external facing, which is to be in irregular courses. Whether the internal plain wall-faces will be of wrought stonework must depend upon cost. The choice of the internal wrought stone must depend upon its functions and position. Parts carrying much weight would probably be of Dalmeny stone; other parts may be of Fifeshire or other stones less costly to work.

The ribs of vaulting to choir, aisles, and other parts vaulted in stone to be of one of the stones last alluded to. The filling in between the ribs will be either of wrought stone, stone in irregular courses, or rubble faced with plaster, according to circumstances.

I have made a calculation as to the cost which gives a result as favourable as I could anticipate; but as such works as this are rarely erected in our day, I will not pledge myself to meet your views with minute accuracy, but content myself, as I should have done had I been selected your architect without competition, with carefully aiming at the prescribed sum; and I believe that, with care and reasonable economy, and possibly with the aid of some safety-valves, it may be realised, though it would not be wise in a matter proverbially so much of a lottery as the cost of a large building to pledge oneself too minutely. My object has been to give the best and noblest church which your conditions appear to admit.

I have made this my anxious aim, but beyond this I will not bind myself further than to say that I believe I have realised my aim with very reasonable accuracy. Some of the more decorative fittings, such as the reredos, may be looked for as individual offerings, and the painted decorations would not be included.

I will ask one favour: as I have given nominally two designs, though really two varieties of the same idea, I will beg of you, if the matter comes to a vote, to view the two as one, so that I may not run the risk of being outvoted by my own supporters.

My name not appearing, it may be right to say that I am an experienced church-builder, and can refer you, though it will be needless, to a long array of ecclesiastical works; and, should I be honoured by your appointment to this great and important work, I shall devote my best energies and my most anxious exertions to rendering it worthy of the diocese of Scotland's chief city, and worthy, also, of a place among the architectural monuments of that famous metropolis.

One thing I see I have omitted: I refer to the clock; but I cannot bring myself to disfigure the tower (or towers) with a prosaic dial. For the clock and its works the room is ample, but, in a district where every house is replete with timepieces of every variety, I would conjure you not to disfigure your cathedral with clock-faces, but to be content with chimes, which may be constructed with any degree of horological or musical elaboration.

LEICESTER-SQUARE: A RETROSPECT.

"Leicester-square has nothing remarkable in it but the inclosure in the middle, which alone affords the inhabitants round about it something like the prospect of a garden, and preserves it from the rudeness of the populace, too." Thus wrote the editor of the *Gentleman's Magazine*, in the year 1733; but how different is the condition of the square now. Who would have prophesied that a fashionable place of the eighteenth century, containing many noble mansions, in one of which lived a queen and several generations of the royal family, and in others Sir Isaac Newton, Sir Joshua Reynolds, and Hogarth, should, in the nineteenth century have been allowed (although still in the centre of London and close to some of the chief thoroughfares) to fall into a condition that makes it a disgrace to the metropolis?

In the year 1658 we find by the famous map of Richard Newcourt (engraved by William Faithorne) that the site of Leicester-square was occupied by a field, with a footpath across it leading from the back of the mews to a lane, now Princes-street. To the north is a large house, surrounded by a wall, with a garden behind, which adjoins the Military Yard, founded by Henry Prince of Wales, and afterwards kept by Foubert, in the reign of Charles II., as an academy for riding. This was Leicester House; but when the square was planned, the house must have been pulled down, and placed further back; because a line drawn from the road, now Piccadilly, by the old gaming-house at the top of the Haymarket would strike through the gardens at the back of the building. In the map another house is marked as standing on the site of Cranbourne-street, the gardens of which run north to St. Giles's Fields. Leicester House takes its name from Robert Sydney, Earl of Leicester, the father of Algernon Sydney, of the handsome Sydney of Charles II.'s Court, and of the Sacharissa of the poet Waller. The house was built upon Lammas land, and the Earl appears by the accounts of the parish of St. Martin to have made yearly payments for the Lammas of the ground occupied by the house, gardens, and field in front. Lord Leicester did not die until 1677, but he does not seem to have lived in his house for some years before his death. The unfortunate Elizabeth, Queen of Bohemia, died here on February 13, 1661, and afterwards it was a favourite home of foreign ambassadors, among whom were Colbert and Prince Eugene.

In 1718 the Prince of Wales (afterwards George II.) bought Leicester House and took up his residence there on the occasion of his quarrel with his father. His son, Frederick, Prince of Wales, followed the example set him, by quarrelling with his father and living in Leicester House. There is a scarce print of the square which shows this Prince proceeding in a sedan to St. James's, attended by his suite and by halberdiers. There is another in Strype's edition of Stow, which shows the house well, with its courtyard in front and garden in rear. The Prince's widow, the mother of George III., was living here in 1761, according to Dodsley's "London and its Environs," and her son the Duke of Gloucester in 1766. About 1778 the house was let to Sir Ashton Lever, who filled it with his Museum of Natural History. These large collections were offered to the public in a lottery, but only 8,000 guinea tickets were sold out of 36,000. However, the proprietor allowed the lottery to take place, and although he held 28,000 tickets, he lost his museum, which was won by a Mr. Parkinson, who only held two. In 1791 New Lisle-street was built on the site of the gardens. On the west side of Leicester House was built Aylesbury House, called after Thomas, second Earl of Aylesbury, who entertained Peter the Great here when he visited England in 1698. It afterwards passed into the Savile family, through the marriage of Charles, third and last Earl of Aylesbury, with Lady Anne Savile, eldest daughter and co-heir of Sir William Savile, bart., second Marquis of Halifax, and has since been known as Savile House. George III. lived here when Prince of Wales, at the same time that his mother was living next door at Leicester House. Sir George Savile, bart., M.P., possessed Savile House in 1780, when it was stripped of its valuable furniture, books, and pictures, by the Gordon rioters, who burnt all the property in the fields in front. At the same time these agents of destruction tore down the railings and used the iron for weapons. Early in the present century the house was rebuilt, when it was opened with the exhibition of Miss Linwood's needlework, the commencement of a long series of miscellaneous exhibitions, which continued here till the house was destroyed by fire in 1865. Miss Mary Linwood, the mistress of a boarding-school at Leicester, commenced the imitation of pictures in 1785, and in the following year received a medal from the Society of Arts in honour of her work. When she had succeeded in finishing a sufficient number of her productions they were shown privately at the Pantheon, and in 1798 they were first exhibited publicly at the Hanover-square Rooms, where 40,000 visitors attended to view them during the first season. Soon afterwards the collection was removed to Savile House, and exhibited there till the lady's death in 1844. 3,000 guineas were refused for the chief work, viz., "Salvator Mundi," after Carlo Dolci, and Miss Linwood bequeathed it to the Queen, but so reduced was the value of these works at her death, that when Messrs. Christie & Manson sold the collection by auction, all the pictures, except a few which were reserved, did not realise more than 1,000*l*.

On Feb. 28, 1865, Savile House was burnt, and among the spectators at the fire were the Prince of Wales and the Duke of Sutherland. Although eight years have passed since then, the site, in spite of several proposals to utilise it, has remained unbuilt upon, and the unsightly gap still remains.

Hogarth came to live in Leicester-square (then more commonly called Liecester-fields) in 1733, and remained there till his death in 1764. His house was on the east side, and the most northerly of two houses afterwards joined as the Sablonière Hotel. Hogarth's sign was "The Golden Head," and outside his house he exhibited a head cut out of pieces of cork by himself. There is an engraved card of Hogarth, dated April, 1720, which announces him as "Engraver at ye Golden Ball, corner of Cranbourn Alley, little Newport Street." Next door to Hogarth's lived John Hunter, who built a gallery at the back of his house, in 1785, to hold his museum, the nucleus of the celebrated Hunterian Museum of the Royal College of Surgeons. The Sablonière Hotel has lately been pulled down, and in its place has arisen a new building, occupied by Archbishop Tenison's School.

Sir Joshua Reynolds lived at No. 47, on the west side, from 1760 till his death, February 23, 1792, and here have met all the celebrities and beauties of his time. The charming picture of "Puck," which was cheered when it was sold by auction to the poet Rogers, was painted by Reynolds from a little child that he found on the

steps of his house. Alderman Boydell was much struck with the portrait of the naked boy, and wished it could be introduced into his Shakspeare; a friend, therefore, suggested that Sir Joshua should turn the boy into Puck by adding fawn's ears, and seating him upon a mushroom. The painter's handsome house was subsequently held by the Earl of Inchiquin, then by the Western Literary and Scientific Institution, and is now in the possession of Messrs. Puttick & Simpson, the auctioneers. In 1787, Lawrence, then a mere boy, was induced by his friends to open his studio in Leicester-square; but this rivalry with the great master was not continued more than a year.

On the 2nd of June, 1851, Wyld's Great Globe, built over the centre enclosure, was opened. This vast representation of the world was 65 ft. in diameter, and occupied 10,000 square ft.; its proportions were ten miles to an inch horizontally, and one mile vertically, and to view the whole more conveniently the world was turned outside in. When the huge building to contain this globe was erected, it was looked upon with favour because it rescued the square from the dilapidated condition it was in,—a condition that is said to have given rise to Ledru Rollin's work on the decadence of England.

When the Great Globe was cleared away, in 1862, the miserable remains of the equestrian statue of George I.* were disclosed to view, and several practical jokes were played upon it. This statue had once been brilliantly gilt, and about 1754 was brought from the Duke of Chandos's seat at Canons, near Edgware. May we hope that something is now to be done with the square, and that the disgraceful condition in which it has so long been left will be followed by a better state of things. Is the hoarding raised round the open space a preliminary step in the good work of making the enclosure agreeable to the eye, and creditable to the neighbourhood? If not, Parliament should interfere. Private rights, if there be any, have been allowed there long enough to contravene the common weal.

GENERAL EXHIBITION OF WATER-COLOUR DRAWINGS.

(AT THE DUDLEY GALLERY.)

THIS, the ninth of the annual exhibitions of clever, pleasant, and pretty drawings that for the time past have regularly disproved that the two water-colour societies show fully enough how strong and prevalent this readiest means of making pictures popular really has become, might be judged to be the best of them; even without the great help that some extraordinary assistance lends. It is worth the unfair fare of a bi-quadrupeded cab, or plodding soles' pilgrimage through miles of such sludge and slush that Christmas leaves in liquidation of its debt of white snow and firm footing, to meet with prosperity and success, for they are very dear—very scarce—things nowadays. Strikes are striking, far and wide. A stone dropped into water makes many circles before they merge into nothing.

There is scarcely a drawing here that may not be thought good of its kind; and to specify reason for commendation through 500 little claims for it, would be beyond reasonable expectation of what type-notice can do for what is being so constantly done. Such pictures, however, as Mr. E. Burne Jones paints are quite exceptional, compared with ordinary productions: they are so strong, so fine, in a perverted taste, that they may lead,—or mislead,—to a wrong teaching. Heavy swollen eyelids, lithe supple limbs, and such graces as are cheap,—though they may not always be held so,—are Mr. Jones's adumbrate views of woman's charms. "The Hesperides" (482) is splendid in colour: a diatribe on "red;" the tamed serpent that sticks like one to the apple-tree,—could there be greater anomaly?—the grass and pink daisies, all wonderfully well done, bespeak acknowledgment of great power in apprehending the resources of colour, and the work is a magnificent specimen taken in this light.

"Love among the Ruins" (179) treats of blue as the Hesperides do of red. This, at first sight, might be taken for an illustration of Coleridge's poem, "Geneviève;" but it is not. There was nothing blue about her.

Some critics will find metaphor in every inch of this,—it is their wont; but there is bad perspective, and more than that, to leave question if the picture is entirely a good one.

There are many clever drawings amongst the more than 500; but they are in the near neighbourhood of "Old Masters," and it is a scoff and a shame to talk or write of present art when a swept crossing leads to what art was. It is a dead religion; but a lively faith in handiwork's worth still exists.

* The statue has been supposed by some to be a representation of George II., and by others of William III.

PROFESSIONAL PRACTICE OF ARCHITECTS.*

(4.) *In Dealing with Money.*

Generally.—Let no money pass through your hands (except the salary of the clerk of works). The method of trade payments will probably suggest itself, and you will with difficulty get credited with taking extra trouble and no profit. Of course you can sometimes safely deviate from this rule, when your client is an old personal friend, or is disconnected with business, and looks on you as a friend as well as professional adviser. Avoid ordering goods. Select on occasion what you want from a manufacturer's stock, and let the contractor order and take every responsibility. If you only make stipulations as to the understood selling price, the contractor will make a profit on the transaction, and usually, therefore, take more interest in it. You will also be relieved from liability to be charged for the goods, and at times from even more unpleasant suspicions. Get the habit of treating questions affecting money with much care. It is a very important consideration among private persons and with the Government and all public bodies in England.

I. *Estimates.*—These you will do well to make deliberately (never guessing at a price), in no very sanguine spirit,—of course, possessing yourself of thorough knowledge, and dealing with complete honesty with your own judgment. Such approximate estimates should be made and submitted before tenders are received from tradesmen. It will always be well to make it clear that no one can tell what everything is going to cost. This will be the case especially when the foundations are doubtful, or when the work is to be done in great haste (*e.g.*, the cost of theatres is almost invariably arrived at after completion). In works of repair to a decayed old building, many works may prove necessary, when hidden parts are uncovered,—rotten timbers to roofs may require replacing, walls underpinning, &c. In the case of new buildings, cubing out is a valuable mode of arriving at an approximate estimate. Wisely and carefully applied, it is a very safe guide. Always follow the same method of measurement: either (1) from the ground-floor line, (2) from half-way between floor and bottom of footings or from the top of the footings, (3) from bottom of footings, or even (4) bottom of all artificial foundation. Method 3 is the safest in general results. Make a separate item of an extraordinary amount of concrete. Half-way between the top of the walls and the apex of the roof will usually be a fair height to measure to. If the chimneys are elaborate and high, an extra allowance must be made. Keep the divisions of the building separate,—the more elaborate main building, the plainer offices, the stables, and any structure differing in elaboration or kind of materials from the rest. Your skill will be tested in applying the proper price. You must devote some special work to the acquisition of experience, to ascertaining the prices at which buildings actually erected work out; and do not fail to tabulate for an easy reference every new building or work of any size you have designed and executed. Check the estimate thus obtained before using it:—(1) By putting a price on each square (100 superficial feet) of each story; *e.g.*, for ordinary buildings not too high nor elaborately finished, 30*l.* per square per story might usefully supply a rough check. Of course, for increased accuracy, this method requires delicate adjustment for each building in question. Or (2), you can take out approximately the principal quantities, and price them; *e.g.*, the gross amount of brickwork; the number of different openings (putting an inclusive price on each); the floor, joists, and ceilings measured together, the roof and all coverings. Applied boldly, this rough measurement need take little more time than cubing. At the same time it will be even less reliable unless experience has taught a good deal pretty accurately as to the cost of the various parts. Another method (3), is to put down so much per room, or (4), per occupant. For stables, 100*l.* per horse for plain ordinary work, ranging up to 250*l.* per horse. For schools, 5*l.* a scholar, or 6*l.*, 7*l.*, or 8*l.*, according to circumstances. For hospitals, 40*l.* to 50*l.* per bed has done the work, and they have cost as much as 500*l.* per bed or more.

As to *Builders' Estimates* [or "tenders"].—They are obtained on the general understanding, in limited competitions, that the lowest will be accepted, either without revision or as a basis for negotiation. Therefore, if for any reason no pledge can be given that a tender can be recognised in this way, it must be expressly notified to the contractors when they are first asked as to the matter. These tenders will be influenced greatly by the facilities given for carrying on the work, by the contractor's, more or less, complete knowledge or ignorance of the materials to be used, and by his confidence in, or distrust of, the ability and character of the architect. In every case *quantities* of some sort are indispensable. The employment of a man who is a quantity surveyor and nothing else, has many advantages. He will, if a capable man, be cool; will work with a good deal of system; give time uninterruptedly to the work; and will look on everything with a keen, critical eye, and an entire freedom from prejudice. An architect taking out his own quantities will be helped to profitable work, and may gain some critical insight into details that he would otherwise have overlooked; but the opinion of people of much experience is against his employment in this way. For there are certain risks. The architect may be too sanguine, and pass lightly over unusual work. The advantage will be lost of a new eye and mind, in the detection of lacunæ, and the clearing up of difficulties; and the payment will usually be received from the builder, making the architect in this respect legally the builder's servant. An architect should not go further than the following arrangement:—He should bring in a surveyor of good repute to share the work and the remuneration; and the responsibility should fall wholly on this surveyor, whose name alone should appear, and who should receive the builder's payment. Quantities might be simplified of much of their detail without harm being done. It is, however, the recognised practice to have all the detail that is practicable. Thus nothing is allowed to escape, and contractors are guided by the minutiæ in estimating the quality of the work. Prices may indeed be put to everything by the builder's clerks; but he will himself take something off, and trim his tender generally, if he is anxious to have the job.

II. *Accounts.*—(*Price settled for Works at the Close.*)—The quantity surveyor in large works, with many deviations from the contract, will often be employed. A schedule of prices in the form of a priced bill of quantities will then be found very useful. In smaller works it is a good plan to make up the account with the builder. Usually, however, he presents an account first, and it has to be dealt with as may prove necessary. Explain to the client as much as he wants to know (no more). An architect's statements of accounts should be short (on one sheet of paper), stating contract and agreed amount, value of additional works beyond that of omissions and money provisions — the principal additional works being. . . . . amounts paid, and balance. The full detail of each item should be kept, and supplied at once if asked for. It is the custom for an architect not to state the detailed prices if he can help it. Builders object to their prices being known, and should always be very formally consulted before priced items are sent to any one. Stand by a settlement stiffly. Of course, before it is come to, you will be satisfied that it is just to both sides. . . . . Sometimes a contract is for everything to be measured and valued at the close of the works. Rarely recommend this course. Works always cost more when thus executed; but it may be indispensable for buildings commenced and completed in great haste. The contractor should in such a case be a man of tried character, who will want more work from you and others known to you. . . . . When the agreement is for labour and materials at prime cost, and 7 to 10 (or other sum) per cent. profit, a special system of periodical checking will be necessary; but this method of payment is comparatively rare.

III. *Professional Charges.*—Avoid working for

* From Lectures by Mr. Roger Smith,—see pp. 15, 24, *ante*. We commend these and the previous notes to the careful consideration of young architects.

any one besides your client, and receiving payment for such services. The builder will often want extra drawings or copies, or to pay for trouble that you might avoid,—or on other specious pretences it may be made clear to you that money will be paid if you are willing to receive it. The sole purpose is to get you under the thumb, and keep you there till the building is completed. If this sort of thing is suspected, a client will go to some one else next time; and if it gets abroad, respectable architects and builders wll have nothing to do with such an architect. For all charges the R. I. B. A. paper gives the present general practice throughout the United Kingdom. Young men may not, in justice to the rest of the profession, take work at less than 5 per cent.; but they may justify their appointment in place of older men by giving a greater amount of personal trouble and extra service for the recognised remuneration. The 5 per cent. charge must be regarded as a give-and-take arrangement, having one great advantage,—that clients know, thereabouts, what they will have to pay,—and on the whole it does not work very unfairly in a varied practice. Try to keep as closely to it as possible without doing yourself obvious injustice; do not charge all you might charge, using your rights as to extra charges with moderation. Present your account in small compass and neat form:—"To professional services in receiving instructions in [quote services as detailed in R.I.B.A. rules] . . . for . . . . ; the amount expended under the architect's superintendence being . . . . *l.* [deduct any amount from the builder's bills on which you were not consulted, especially if you do not approve what was done]." On this amount calculate the commission. Charges for special services, disbursements, and travelling expenses will then follow. Although the per-centage charge is thus legally (and to our advantage) recognised as superseding charges for time and trouble, you will do well to keep a careful diary, and have a clerk's diary with the time on different works recorded. Occasionally work out from these the exact cost of the drawings for a building. You will then see whether you are carrying on business extravagantly. If you have to live by your profession this is of much importance. Or you may find that you could be less niggardly, and safely indulge yourself in some more expense. Keep a small set of books, and take stock of your position at intervals to see how you stand, generally and with reference to special works. These books may be (1) a ledger, containing the details of each undertaking extracted from time diaries, &c.; (2) a bill-book for copies of accounts; and (3) a cash-book for all payments and receipts. Obtain payments on account while the works are going on. On small works (under 2,000*l.*) one payment shortly after signing the contract, and another when all is being drawn to a close, should meet the bulk of the charges; only a small balance being left for the final payment. In larger works obtain payment at the time, and on the amount of each certificate. Avoid most thoroughly any mistakes or discrepancies in money statements. Let every such statement be in writing, or, at any rate, make a careful memorandum. Many worthy people who are easily managed as to many things, are very difficult about money matters, and nothing but the evidence of habits of extreme care can make them trust you fairly.

(5.) *In dealing with "Law" and "Property."*

To deal fully with the class of business managed by surveyors would require several lectures; in one, notice can only be taken of the portions of the subject cropping up in ordinary practice. The case is rare in which an architect can dispense with surveying, and devote himself wholly to the design and superintendence of works of real architecture. Frequently the money to be earned by other practice is wished for; and it is often necessary to give good service on any matter allied to building, or a valuable client may find that some one else could serve him better. Most young men would therefore do well to be "architects and surveyors," and prepare themselves accordingly.

I. *Law.*—Every Englishman is supposed to know the whole law of his country. Ignorance cannot be accepted as an excuse in any case. Bearing this in mind for your own sake, you will find it frequently necessary to take much pains to ascertain the right and wrong in any procedure, and will soon acquire a wholesome distrust of any smattering you can obtain from general text-books; for the greater part of the law of England is not in Acts of Parliament, but in the recorded decisions, and precedent is of extreme importance. Prefer, therefore, to follow a customary course, for which you have good precedent, rather than any innovation of your own. Use words and phrases well established and recognised; or, if you are obliged to deal with a case that is new to you, use the plainest common-sense English possible, and avoid any pretence of legal technicality. If a "penalty" is prescribed in case of non-completion of works by a certain time, it will probably not be enforced, or the amount of damage actually sustained will be specially assessed; but if a certain sum is fixed as "liquidated and ascertained damages," it may be held back without question. If a committee is made to enter into a contract with a builder, it will not be a serviceable contract; but certain individuals must be specified, who are to be separately liable. (An incorporated body may, however, enter into a contract through officers or under their seal, according to their special form of incorporation.) And many other instances might be adduced of the necessity of conforming to the legally accepted way of putting things. If anything goes into law it means delay,—no telling how prolonged. This is owing to the great pressure on the Courts, and perhaps in part to the confirmed habits of the legal profession. Even in ordinary matters, delay, seemingly quite avoidable, is apparently looked on as proper. Consider litigation, therefore, as one of the most serious evils you can encounter, and give any amount of time and trouble, and make any possible sacrifice in order to avoid it. If, however, it must be resorted to, let it be done, with the cost counted, and boldly, and well. Shrewd men say, "Consult a rich lawyer: he will [keep you out of lawsuits if he can." A prosperous and well-established man should, in fact, be preferred to a man hungry for practice, and not eager to point out the weakness of a case intrusted to his guidance.

As to (1) *Contracts for Buildings*, it is desirable to have a carefully-drawn legal contract prepared by a solicitor. If this is not authorised, any sufficient written memorandum will generally be sufficient. As an instance, letters were simply exchanged, with reference to an important building matter, and the contract was considered so binding that 5,000*l.* were paid to put an end to the arrangement. The following simple form was recommended by an eminent Q.C., now a well-known judge. It should be placed at the end of the specification and a set of general conditions of contract.:—"I undertake to perform the above works, under the above conditions, for the sum of £—— (Signed) A. B. Accepted (signed), C. D. London, January, 187—." On the subject of contracts, read D. Gibbons,—"The Law of Contracts for Works and Services" (Weale's Series). As to (2) *Certificates* for payments to a tradesman, "for works being executed by him at ——"; let them be on an engraved form, with counterfoils, and addressed to the client. At the bottom of each should be put a statement as to the previous certificates. (In arranging the amount, to be paid, let the builder bring his figures, to show how he makes up what he asks for. In the absence of express stipulation he may be paid the same proportion of the value of extra works as of those under the original contract.) For (3) *Orders for Extras*, under any large or special contract, the solicitor should supply the form. Much injustice may possibly be done if the technicalities of the contract are not minutely observed. Generally, for anything unusual, always advise that a good lawyer shall be employed to shape the document. When (4) *Building on Leasehold Property*, see to the covenants of the lease, and have everything formally observed, all consents obtained, and restrictions complied with. Decline, as a rule, to get the consent of adjoining owners. This will be better done, when a matter of any favour, by the building-owner himself. In (5) *Works in London*, the Building Act, the Local Management Acts, and all by-laws, and the new by-laws of the water companies, having the force of law, must be carefully studied, and their provisions complied with. The main purposes of the Building Act are to secure (1) fair stability, and (2) the most obvious and simple precautions against fire and the spread of it. As a rule, never build less substantially (in any part of the country) than the schedules of this Act stipulate (and never build 9-in. walls, even for upper stories, if you can get 14-inch). A public building is to be done to the satisfaction of the district surveyor, who will generally require that the structure shall be somewhat stronger than a building of an ordinary kind. For your own sake, it should not be weaker. Some of the requirements of the Act can be dispensed with, if the consent of the Metropolitan Board is first properly obtained; *e. g.*, for a detached house, projecting eaves, wooden barge-boards, or bay-windows, and wooden porches or verandahs may not be objected to. (6.) Light and air are the subjects of much contention in works in large cities; the action of much recent decision being really prejudicial to architecture, and to the improvement of our cities. Much of this injury should be prevented by the more universal widening of streets, and by the adoption, as a rule, of compensation for deprivation. Still you will have to regard for the present the rules as they stand in legal minds. If you are consulted, therefore, by an injured person, keep in mind the fatal effect of delay in the assertion of your client's position; let an injunction be obtained, or steps taken in view of one immediately. (7.) *Disagreements may occur.*—The builder may sue for money, extras may be disputed, perhaps the client refusing to recognise the orders, or the work may be said to be unsatisfactory, and he may decline to pay. Or the architect may have to sue for his charges, or even for wrongful dismissal. Some of these may be contemplated and provided for by an arbitration clause in the contract; otherwise it will probably be referred to an arbitrator, either a barrister or an architect, by the Court, or by consent. The submission to arbitration (no matter how small may be the matter in dispute) should be drawn by a good solicitor, and should specify the arbitrator, and (very precisely) what is referred to his decision. On the admission or rejection of evidence you should be prepared, if acting thus as referee, with a knowledge of the rules of law, so as not to risk the invalidation of the award. This award should be made as bare as the verdict of a jury, and specify no reasons. In all cases but the most simple, have your award revised by a good lawyer.

II. *Property.*—An architect should be the right man to advise on questions affecting the management and value of houses and other buildings, and of building land. The business will usually come through solicitors, who will do the legal part, leaving to you all the purely technical work, and the responsibility for it. (1.) In dealing with Dilapidations under leases and other tenures, nothing but experience can render you ready and self-confident. Let students take every opportunity of following actual cases, and ascertaining what is taken or not taken, and why, and what disputes (if any) arise. They can in this way only acquire knowledge as to the exact legal force supposed to be attached to the terms in covenants. Questions as to fixtures, also, and their value, and the right to them, will frequently demand quick and (of course) correct decision in actual practice. (2.) *Valuations of Property* are usually required for (*a*) mortgages and (*b*) for sales or purchases. (*a*) These do not usually involve so much responsibility as the others, owing to a proportion only of the reported value (one-half, or a little more) being advanced; (*b*) a valuation to guide or determine actual purchase or sale is often of great interest, well paid for, and—if thoroughly reliable,—as valuable a service as can be rendered by an expert as to buildings. The methods of calculation are simple, involving little mathematical skill in application; but experience and talent can alone determine the letting, or probable letting, value of a building. Inwood's Tables, Mr. E. I'Anson's recent paper at the R.I.B.A., and similar sources of information, should be studied and at hand. Continual attention extended over many years, many precedents, and much sagacity, can alone enable you to give reports that will stand the test of after-experience in difficult cases. Valuations of ordinary leasehold and other simple tenures you will not find difficult, if you devote to each case pains, and thought, and system. (3.) *Laying out Estates for Building Purposes.*—The technical part can be done by any architect with the most ordinary common sense. To determine, however, the class of building that would be proper, or likely to tempt speculators; to settle the frontages and lines of road so as to make the most and the best of a property, will require a good deal of general intelligence and information with reference to the views of builders, and ordinary tenants, and house-buyers. Settle firmly, and maintain stoutly, conditions as to what shall be permitted or not on the estate. Endeavour as much as you can to enforce good sound building, thorough drainage, and a fair architectural

appearance; make and maintain covenants as to subsequent alterations of property, so that they may not in any case be undertaken without consent being obtained. At times, from the want of this provision, the whole of the houses in a street may be depreciated in letting value, and much unfair annoyance given, owing to the erection of some after-addition to one building. A laundry recently erected at the back of a house in London has lowered the value of eight houses in the street adjoining 10*l.* or 15*l.* per year, and much damaged the adjoining houses,—a wrong for which there exists no remedy. Try, therefore, in the creation of house property, so to design and regulate the buildings, and the legal covenants affecting them, that an even hand may now and hereafter be kept over the whole, and no gross injury permitted to be done by one leaseholder to another. (4.) *The Management of Estates.*—Much lucrative occupation, in the receipt of rents and keeping property in order, falls into the hands of architects and surveyors who are good men of business, especially in the case of the large leasehold estates of noblemen and others in London. This work is not by any means so dull and commonplace as it might seem to an outsider. It has the merit of being very useful; for often the only mitigation of the miseries of London buildings is found in the skill, and tact, and right feeling, and dealing of the comparatively few men who are in the position to exercise these qualities in such business. London suffers grievously from the system, now and heretofore pursued, in land letting, by which a large secure income realised by the landowner is obtained without much difficulty, and everybody else who is connected with the property is disgusted, and even injured. Unintelligent planning, and faulty and dishonest construction have been indulged in, so that houses generally are a crying disgrace. Perhaps resulting from this, the public cares hardly at all about good building or good drainage. You will, therefore, have difficulty,—perhaps will run risks,—if you press too hardly on speculators. In the long run, however, pecuniary advantage may in some cases be secured by assuming a higher standard than ordinary, and keeping to it. At least you, and those for whom you act, will have the satisfaction of setting a good example where it is much wanted.

In the general sketch thus given of the practice of architects, it has been made evident that many good qualities and attainments are wanted,—both in the man and the expert,—in order that he may be successful and useful. Fair success is, however, probably within the reach of any one who is well-intentioned, and can and will take pains. As compared with most other callings, there is in our profession a wider range of occupation, and better opportunity for the development of the various sides of a man's character. There is, above all, the possibility of real distinction, and of the building up of character, and position, and influence, in which no natural gifts, no possible excellence in education, no amount of general or special attainment, will be found superfluous.

RESISTANCE OF STONES TO CRUSHING.

AMERICAN SOCIETY OF CIVIL ENGINEERS.

At a meeting of this Society in New York, on January 8th, a paper, by Mr. Charles B. Richards, of Hartford, Conn., recording "Experiments on the Resistance of Stones to Crushing," was read.

The specimens tested were old and dry samples, well selected, of various American building stones, worked into 1 in. and 1½ in. cubes, with flat and smooth faces.

The testing machine used was built, after a long experience with two smaller and similar machines. It is arranged to weigh the strains upon a sensitive platform scale of 50 tons capacity, and is well adapted to quickly give accurate results.

The specimens were crushed between the plane faces of two hardened steel hemispheres, the curved portions of which were seated in corresponding cavities of steel blocks, fixed in the machine. Single thicknesses of "lace" leather were interposed between the stones and metal surfaces: thus the pressure was uniformly distributed; it was in all cases applied to the faces of the cubes parallel to the natural bed of the stone, and carefully increased to rupture by pouring shot into the hollow weight by which the strain was caused.

Tables were presented, giving the minimum, mean, and maximum resistance to crushing, per square inch of the specimens tested.

Sixteen specimens of granite from six quarries gave from 8,620 to 15,622 lb. minimum; 9,838 to 18,778 lb. maximum strength. Fourteen specimens of sandstone from three quarries gave from 5,806 lb. minimum, and 8,956 to 10,928 lb. maximum strength. Ten specimens of *white marble* from three quarries gave from 3,905 to 12,917 lb. minimum; and 5,976 to 13,972 lb. maximum strength,—each being 1 in. cubes.

The specimens failed by breaking up into slender prisms and pyramids, with axes normal to the pressure.

HOW FAR IS AN ARCHITECT LIABLE?

BEFORE making up one's mind that the contractor would himself be legally liable in "M. H.'s" case,* one would ask a number of questions, and then be perhaps a little doubtful. Was the lead pipe clearly defective when fixed? In what did it differ in quality from the specification? Not the weight, nor size? Was the contract a low one, and the work not intended to be first-rate? Was a set-off agreed against extra work done? It needs no racking of the brain to make out a sober numerous series of answers implied in questions. Let us, however, drop questioning as to the legal and moral liabilities of the contractor, and conclude that he is to blame without a doubt; and that, with equal certainty, he cannot personally make good his misdoings, frauds, or errors. Is the architect liable? Here, again, we find self-questioning as to the variations without controversy fairly made by every architect in the conduct of any work. Has the architect stated that the pipe should not have been used, and that he did not know of the variation? If so, we have touched the realisms. Was he bound to know of it, or to suffer, if need be, for his overlooking it? Clearly it would have been better for everybody if he had found it out, and insisted on remedy or recognised recompense. Many architects, especially those not overburdened with work, take a deal of pains,—for which they receive neither thanks nor adequate pay,—in worrying everybody as to every item of construction and fitting; sometimes with very pleasing results in efficiency and special contrivance; sometimes, it is to be feared, with some injustice to a contractor who has not expected to be criticised so sharply, and with a lawsuit or arbitration at the end of all. The former result will of course depend mainly on real knowledge, command of temper, proper feeling, &c.; all the things, in fact, that go to make up a man it is a pleasure to meet, as distinguished from a mass of punctilios and conscientious querulousness. The extra services, of which we are speaking, may be given from all kinds of motives,—as a study, from personal interest in a special work; for experiment, and the sake of making it succeed, in order to impress the sense of capacity and personal energy on a client and his connexion,—perhaps in some instances from the architect's love of work in general, and specially for the work of his profession. I think, however, that no one contends that they are given as a part of the "professional services included in the ordinary charge of 5 per cent." In the last [confirmed at a General Conference of Architects of the United Kingdom, 1872] "Schedule of Rules for Professional Practice and Charges of Architects,"—Clause 2 gives "General Superintendence of Works (exclusive of Clerk of the Works)," as thus included. The intention of this phraseology is, I take it, to indicate the conclusion I have stated above, viz., that special, detailed, minute superintendence is not what the architect offers (except under special bargain), or what anybody has a right in thought, or by law and custom, to ask for, for the accepted standard remuneration. I need not say anything about the position that the clerk of the works occupies, and his liabilities, and the architect's as affected by his employment.

These are quite questions apart, and difficult ones, too, it may be said; though something fairly approaching uniformity of practice and customary understanding is, I think, in existence for the best works,—in spite of the occasional aberrations of suspicious boards and meddling committees. Suffice it to say that the architect confessedly incurs many responsibilities in respect of design, directed construction, &c., and that, with reference to general superintendence, he is responsible in practice for furnishing such intelligent direction of the works in progress as may tend to secure the right interpretation and carrying out of his designs, but that he needs never pretend to do the duty of a clerk of the works,—certainly not on buildings at a great distance from his place of business, and perhaps nearly unlimited in number, extent, and variety. Every reasonable juryman would estimate the probabilities of the case,—the understanding of the employer underlying an architect's engagement, the real satisfaction with which a man is thrilled when he is told that his architect has no leisure to give to his special design,—by his own common sense; and should not, under any decent judicial direction, be led to credit an architect with responsibilities for services which the client well knew from the first that he would never try to perform. And the terms of employment and rate of charge apply equally to the whole profession. The good sense of the general mass of people recognises this, for the most part, very thoroughly. The world-embracing Leviathan is consequently employed only on works where public subscriptions are necessary, and must be got from all parts, and the work is merely of public interest; and the expense of a clerk of the works is, of course, not worth consideration. On works of private kind, on the contrary, it is more general to have a local or a younger man who will be likely to do, in return for the same pay, many works of supererogation,—among which would probably be, with good luck, the detection of an attempt at the use of a wrong sort of pipe, either through the evil intention or blunder of a builder or some of his people.

Has, then, "M. H." no remedy? Suppose the builder's liability clear, did not the contract provide for the liability going beyond his death to his "heirs, executors, administrators, or assigns"? Is there no estate? or would "M. H." be unwilling to risk his action, or maybe to bring penalties on a family without its support and head? If so, one can only regret that inevitable loss has come to him, and hope that, in building as in other business and affairs of his life, those contracting with him will hereafter do him justice both by their fair dealing and intelligence,—or that they will survive the time that may be necessary. This is the kind of consolation that most of us find in our ears and in our own minds when we are unfortunate enough to have been thoroughly defeated by man or circumstance. X.

* See p. 91, *ante*.

THIS question may be considered in the following manner:—

1st. The architect and contractor together will be made, as far as legally possible, responsible for the production in due time of a result realising all that custom, common sense, and durability could demand in carrying out the client's instructions.

It were impossible for an architect to supervise every portion of material used in a building (even if he were always on the spot), because a very small defect in timber, iron, or lead, would sometimes be almost invisible, and yet exist, and if there, be calculated to produce serious trouble, or perhaps danger; but it is, however, customary in most works of any importance to employ a clerk of works, who will, in doing his duty efficiently and conscientiously, discover and condemn whatever material can be found by him in the works which shall in his opinion (subject to the architect's approval of his decision) be unfit for the purpose the contractor would use such material for; but the most watchful supervision being liable to sometimes fail in discovering what it would be desirable to discover, and therefore the onus of responsibility is legally borne by the party most capable of making it a light one, by himself, his foremen, and workmen, each and severally, doing their best to ensure that the materials they use are really what they ought to be for the purpose. There is also another reason why the contractor should, according to the dictates of common sense, be held liable for bad materials or workmanship discovered after the settlement of the account, *i.e.*, because it is *his* work, and not the architect's. If the architect's work should be done improperly, he would alone have to bear the blame; then why should he be saddled with the blame attached to defects which his most conscientious and attentive care (given so far as compatibility with other duties would admit) had been unable to detect, but

which the contractor had at the least a much better opportunity to discover?

Then, in the case cited by "M. H.," we should deduce from the foregoing reasoning that the contractor was legally and properly liable, and the architect consequently not liable; and the decease of the contractor did not and could not transfer this liability to the architect, to whom it never belonged, but transferred it to the contractor's estate; and if the executors or administrators (if such have been appointed) have not yet paid the debts, there would perhaps be a possibility of recovering the loss, but otherwise it would assume the form of an irrecoverable debt owed by the deceased contractor to his employer, the architect's client.

Henry Ambrose.

Sir,—I, with many others, shall watch with interest what correspondents say upon the question raised by "M. H." in your last. *Many*, like him, have been fearfully deceived. I am amongst the number, only that I purchased house property to the value not only of 500*l.*, but 500*l.* multiplied by twenty-one. I, like him, "employed an architect to see everything done properly, and paid the whole of the cash *on the faith of his certificates*." But a short time elapsed, and I found the partition walls on the basement without foundations, so that I was subject to the expense of making good these serious defects *as well as circumstances would allow*; drains were laid on the *flat*, and soon were "as full as an egg;" faulty tanks put up; plumbers' work defective; in fact, every part showing what is usually known as "scamping!" I have had the property for some years, and it has been a constant expense, and likely to be, from roofs to basements, and below basements, so that it has been like buying the houses a second time, and they can never be after all as they would be if honest men had built the property.

Like "M. H.," I inquired if I had any redress from the builder or the architect. I was told that having paid my money upon the faith of the surveyor's certificate that I employed, I had no redress; that there was nothing to be done but make the best of a bad bargain; and a bad bargain I have, indeed, found it. I enclose my name. A Sufferer.

THE WORK OF THE WESLEYAN BODY.

The eighteenth annual report of the Wesleyan Chapel Committee, 1872, just now published, shows under the heading "Building Department," that the following cases have been sanctioned by the committee during the year:—

125	Chapels, at an estimated cost of ...	£191,840
23	Ministers' houses, ditto	14,115
45	Schools, ditto	27,306
87	Enlargements and alteration, ditto	44,801
72	Modifications of cases previously sanctioned, at an estimated *additional* outlay of	20,715
34	Organs, at an estimated cost of ...	7,778
Total 386 cases.	Outlay...	£306,555

These figures, when compared with those presented last year, show a decrease of eleven chapels, but an unprecedented increase of 49,649*l.* in the proposed outlay; an increase of ten minister's houses, and of 6,773*l.* in proposed outlay; an increase of four schools, and of 844*l.* in proposed outlay. Upon the whole there is an increase of twenty-two cases, and of 76,789*l.* in proposed outlay.

Views and particulars are given of many of the chapels, the most important of which are the Victoria Chapel, Queen's-road, Manchester,—Messrs. Clegg & Knowles, architects; and Launceston Chapel,—Messrs. Jas. Hine & Alfred Norman, architects.

SANITARY ENGINEERS AND THE GOVERNMENT.

We mentioned in our last the attendance of a deputation of Local Boards' Surveyors and Sanitary Engineers on Mr. Stansfeld, with the view of obtaining a more independent position under any new legislation than they hold at present. Strong efforts were made in this direction before the passing of the late Health Act, but failed. The Local Government induce local authorities of appoint medical officers and inspectors by bearing half the amount of salaries, and protect such officers. The engineers and surveyors, although the active executive and practical officers, are left entirely without protection. It is now proposed to make another effort in view of amended or additional sanitary legislation, and to form an "Association of Sanitary Engineers and Surveyors." The Local Government Board have, in the opinion of many, while attaching importance to the functions of the medical officer and inspector, shown entire neglect of the equally important and executive official the "town surveyor," who will become the unprotected "catspaw" to carry out the measures suggested by protected medical officers. Most sanitary authorities screw salaries down as low as possible, and thus obtain inferior men; while such is the case there will be but little sanitary progress.

An advertisement in our last issue announces a meeting of civil engineers and surveyors, at present holding appointments under corporations, Local Boards, and other sanitary authorities, will be held at the Institution of Civil Engineers, Great George-street, Westminster, at two p.m. on Saturday, February 15th, for the purpose of forming an association, and for the discussion of other matters of importance. Those who are interested should attend and help.

MR. SPURGEON'S NEW COLLEGE.

New buildings are about to be erected on an extensive scale for Mr. Spurgeon's Students' College, in connexion with the Metropolitan Tabernacle, at Newington. It appears from a statement made by Mr. Spurgeon last week that the funds towards the erection of the new buildings are making considerable progress. Upwards of 6,000*l.*, he said, had already been collected, but that a large additional sum was still required. The new building, which is to be erected on a site near the Tabernacle, will also be used for a Sunday school, as the present schoolroom under the Tabernacle is said to be ill-suited for the purpose.

THE COAL QUESTION.

The price of coal in London while we write is 2*l.* 8s. a ton!—an unprecedented price, one is apt to say; yet that is not so, according to a writer in the *Daily News*; for so long since as February, 1814, the war price was 2*l.* 11s. 8d.! In February, 1851, it was 12s. 3d.! The writer referred to says:—

"If, to-morrow, the colliery owners of Durham were to notify to the London Coal Exchange that they had resolved to raise the price of coals by 20s. per ton, remonstrance might be useless: the infliction must be submitted to. They know, and use, their power. It would, indeed, be unfair to charge them with 'gagging' the supply, but they are reaping the advantage of having had the supply 'gagged' for them by their workmen. To quote Sir William Armstrong, 'Coal-owners have long been aware that limitation of quantity was the only effectual mode of raising price, but they have never been able by their own action to maintain a restricted production. At last their workmen have done it for them, and we see the result.' It may be added that we feel it as well as see it. At this moment the restriction so produced is rather too tight for the coal-owners. The demand is so keen that they could sell as many coals again at full prices as they do now, if they only had them to sell. But they cannot get the colliers to win more coals than they did before, no matter how high the scale of wages may be,—in fact, the work being piece-work, the get of coals diminishes in proportion to the increment of wage, since the collier is not ambitious of realising a fortune, but is content to receive and enjoy nearly double the wage for about two-thirds of the work he was wont to do in times less prosperous. He is, it is true, in a chronic state of demanding an advance, and his demands have abstract right on their side, looking to the prices which the owners obtain; but when he gets an advance he discounts it by winning so much less coal. So the process goes on and on, towards what climax who shall say"?

A movement is said to be on foot in the North Midland counties to press upon the Government the necessity of instituting a full and fair investigation into the increased price of coal, which is interfering materially with both manufacturing and domestic interests. It is proposed that the court of inquiry should be constituted of men of known ability and unflinching impartiality, who would call before them men from the ranks of coal proprietors, and also men connected with the colliers' unions, and those, working as colliers, not connected with the colliers' unions. The object of the inquiry would be

"to ascertain if the sole cause of the present high price of coal is the advance of colliers' wages and the short-time movement, and other alterations which have been brought about in the working of coal-mines, not forgetting the charge so frequently made against the colliers of late that they are so idle and intemperate now, in consequence of the great wages they receive for a day's work, that the output is seriously limited."

Mr. C. Seely, jun., M.P. for Nottingham, who is a very extensive colliery proprietor, has promised to promote this official inquiry, and to give evidence if called upon.

A new company,—the Diamond Fuel Company,—has been incorporated, with a capital of 200,000*l.*, in shares of 5*l.* each, to acquire and carry on the works now in the hands of Messrs. Barker & Clare, at Stratford, Essex. The process consists in the conversion of slack or duff, coal-dust, or small coal, into solid and compact blocks in combination with ingredients which render them, says the *Mining Journal*, actually superior as a fuel to the lump or screened coal itself. The machinery used in the production of the diamond fuel is almost entirely self-acting, the material being scarcely touched from the time it is first lifted to the machine until it is ready for the market; and as it is intended to establish works and depôts at Liverpool, Hull, Swansea, Newcastle-on-Tyne, Sunderland, &c., the expenses of carriage both for raw material and marketable fuel will be reduced to the minimum.

GUILDS AND TRADE UNIONS.

At a meeting of the Society of Arts on the 29th ult., Dr. John Yeats read a paper on Guilds and their Functions, which will be found in full in the *Journal* of the Society. It is an interesting condensed view of the subject, though open to discussion in some parts. The writer properly urges the existing guilds to assist in the technical education of the country. Towards the close of the paper Dr. Yeats says:—

"Closely connected with the subject of the guilds is that of their modern analogues—the trade-unions. Enough has been already said to show that the principle and practice of labour-combinations is not in itself the novelty, dangerous or beneficial, which it is sometimes asserted to be. As a national institution this is one of our oldest; and if for a time it fell into desuetude, the present century has witnessed its revival with a new power and a promise of long-lived vitality. Like their Mediæval forerunners, trade-unions are societies which have a double object—to provide regulations for some one branch of trade, and to form amongst its members a mutual benefit society. It is the union of these two objects, declared incompatible by the opponents of the system, which has given an opportunity for much of the vituperation cast upon the institution. But that such a union has heretofore existed, the statutes of every craft-guild prove; and that such a union has not been as pernicious as its enemies predict that it must necessarily be, is proved by the longevity of the old guilds, and by the harmony which long existed between the masters and men of the crafts thus united.

As England was the birth-place of the guild, so it has been of the modern association, and the scene of its most extensive development. It was an aggravation of the circumstance which, more than any other, contributed to the decline of the craft-guilds, that gave rise to the trade-unions. As already shown, the growing power of the capitalist rendered it impossible for the craft-guild to exist in its original form. Contrary to old custom and legislation, masters ceased to be men who had passed through the grade of apprentice and journeymen. The rise of the cotton manufacture, the employment of steam-power, and the introduction of costly machinery, made the possession of a large capital still more indispensable to the master. Prices of all commodities had risen, while wages had relatively fallen. Labour was no longer the co-adjutor, but rather the bond-servant of capital. The more intelligent of the town populations began to perceive the power of resistance which combination would give them. Some funds they had, collected for mutual assurance purposes, for friendly societies are of older date than trade-unions. The first efforts of the new unions were directed against the violation of the Act, 5 Elizabeth, c. 4, which limited the number of journeymen and apprentices each master was allowed to keep. It was only at a later period, when they felt their power, that trade-unions began to frame regulations relative to wages, hours of labour, &c., and to organise strikes as a means of attaining their ends.

Two generations ago trade-unions were scarcely known. Amongst the earliest were those formed by the clothworkers of Leeds, in 1802; by the shipwrights of Liverpool, at the close of the eighteenth century; and by the hatters at a somewhat earlier date. In their infancy they were illegal, and were compelled to carry on their operations under the guise of friendly societies, in order to evade the provisions of the Act against combinations of workmen (39 & 40

Geo. III., c. 106). In 1824 they received partial legal recognition, which has been still further extended by recent legislation. In the last twenty-five years their development has gone on with extraordinary rapidity. The *Fortnightly Review* of December, 1867, says:—'Trade-unions are already a distinct power in the State, and are rapidly advancing to a foremost place amongst national institutions. Nearly 2,000 of these are now spread over the kingdom, ramifying through every county, and ensconed in every town and almost every trade.' Since this was written the movement has extended to the agricultural labourers. But not only are these societies becoming truly national; some are forming international connexions, and others are likely to follow the lead thus set. The International Working Men's Association was avowedly formed with the object of uniting the labourer and artizan classes in every country, for the purpose of mutual aid in case of need. The association, under its present leaders, has, however, assumed rather a political than an industrial character, and as such has no connexion with our subject. Accepting the existence of the institution as an undeniable and potent fact, it will be sufficient for our purpose to point out that there are not a few particulars in which trade-unions might learn a useful lesson from the old craft-guilds. They might more closely imitate their scrupulous avoidance of acts of illegality; they might exhibit a little more of that charitable spirit of the old guilds, which looked beyond the immediate interests of their own fraternity; they might connect themselves, as their predecessors did, with works having for their object intellectual and moral, as well as material advancement; and last, but not least, they might emulate their zeal for the doing of honest, man-like work, and for the checking of fraudulent tricks too common in every trade. Mr. Holyoake has well said, in a letter to the *Pall Mall Gazette*, dated July 4th, 1870:—'We have strikes against receiving low wages. There are no strikes against doing bad work. All over the land a good deal of work is executed that is so shabby, so bungling or dishonest, that it is a degradation to be connected with it. If it was known that a unionist was a more reliable workman than any other, that he could be depended on to do good work, and could not do bad,—that he put his character into his work,—a unionist would be the most popular of workmen, and wages would stand higher than any combination could raise them. It ought to be impossible for employers to find men who will execute any shabby work. It is a sort of crime against the honour of industry, a fraud by connivance upon the purchaser."

BRISTOL.

Consecration of St. Matthew's Church, Moorfields.—The church of St. Matthew, Moorfields, St. George's, has been consecrated by the Bishop of Gloucester and Bristol. The site is between the school premises and Redfield House. The church is in the thirteenth-century style, and of Pennant stone. When completed, it will consist of nave, side aisles, north and south chapels, apsidal chancel, and sacrarium, with tower and spire 120 ft. high; the south chapel forming the minister's vestry, and the north chapel the organ-chamber. The estimated cost of the building is 3,000*l.* The contract, just finished, is for the erection of the nave, south aisle, chancel, sacrarium, south chapel, and tower, up to the level of the clearstory windows, at a cost of about 2,000*l.*, leaving the north aisle, north chapel, and completion of the tower and spire to some future day. The church, when completed, will seat 700, and the present section 450 persons. The contractors are Messrs. William Banner & Co., of Bristol. The masons' work has been executed by the Messrs. Beaven, of Bedminster; and the tiling, glazing, plastering, &c., by Messrs. W. Cowlin & Son. The architect is Mr. J. Neale, of Bristol. Among the presents that have been made are three stained-glass windows in the apse, given by Mrs. David Cooper, in memory of deceased children. The pulpit is that which formerly belonged to Emmanuel Church, Clifton. The edifice may be termed a working man's church. There is still a deficiency upon the first contract, amounting to between 200*l.* and 300*l.*, whilst 1,000*l.* more will have to be raised before the church can be completed.

St. Werburgh's Church.—A paragraph, published in a contemporary, says the local *Times*, in reference to the removal of this church, is inexact. The sum provisionally agreed upon by the bishop and the late lord chancellor for the church and churchyard was 9,500*l.*, and it is not expected that any action will be taken except upon the basis of this agreement. Again, the site for the future church is not yet decided upon, but Ashley-hill has been proposed as its site. The Sanitary Authority have given notice that they will require also, for the widening of Small-street, the rectory-house of St. Werburgh's and the house adjoining, but this will be at a separate valuation and by separate agreement.

Opening of St. Simon's New Schools.—The new parochial schools, begun last spring, for St. Simon's parish, Baptist Mills, are now complete, and have been formally opened. The schools are situated close to the church, at the east end. Opposite the front door is the door of the infant schoolroom, 60 ft. by 27 ft.; a class-room, 22 ft. by 20 ft., occupies the corner to the right of the porch. At the left side of the building is the girls' school, 60 ft. by 21 ft., with class-room adjoining, 21 ft. by 16 ft. The schools will accommodate 465 girls and infants. The amount of the contract (which has been carried out by Mr. J. P. Stephens) has been 1,344*l.*, including extras; the site cost 465*l.*, and the expenditure for gas, sundries, and fees of the architects (Messrs. Medland, of Gloucester), has brought up the total outlay to about 1,900*l.*

ARCHITECTURAL ASSOCIATION.

AT the last ordinary meeting thanks were voted to the Prime Warden of the Goldsmiths' Company for permission to visit the hall, and to Mr. R. Hesketh, the architect of the recent alterations, for accompanying the members over the works. There is a rare profusion of rich foreign marbles in the entrance-hall, and in the construction and decoration of the principal staircase, as we have already told our readers. The principal suite of rooms has also been redecorated, and the great hall rendered more roomy for balls by setting back the wall-line between the large main columns, the continuous dado being thus parted with. Thanks were also given to Mr. Williams, the architect to the new Post-office buildings, for his permission to visit them, and for his personal explanations.

A paper was read by Mr. John Sulman on "Teachings of some old Churches in Northants," following the course of a tour made last year as the holder of the Pugin Travelling Studentship. The district thus travelled over was the centre and south-east of the county,—the kind of triangle included between Northampton and Raunds (about twenty miles to the north-east) and Rothwell (about fifteen miles north of Northampton); additional buildings being also visited to the south of Higham Ferrers and west of Northampton. The paper was illustrated by numerous drawings hung on the walls, and by sketches on the blackboard. Mr. Sulman mentioned that Northamptonshire vies with Lincolnshire and Somerset for the first place among the English counties for the possession of the largest number of Mediæval parish churches of excellent architecture. The good building stone, the wealth of the district, and the power of the religious orders, no doubt, contributed to the result. Though the country is not flat, but rolling and well diversified, spires are frequent,—almost ever-recurrent. They are generally characterised by peculiar lightness and grace, some of this being due to their being pierced with two,—sometimes with three,—tiers of spire-lights. The strong, sturdy type of spire hardly appears at all. Probably the so frequent use of this feature was a fashion, once well set, that worked its way down the Nene valley, and then gradually through the length and breadth of the district. At any rate, in walking through, the original meaning of the word "steeple-chase" is driven on the mind, and the possibility of indulging that amusement at any village green in most directions, with only a two or three mile run. The churches mostly have nave aisles, and frequently a chapel joins the chancel. There are few transepts. The towers are almost universally at the west end, opening into the churches by good tower arches. Among a considerable number (about fifty) of churches carefully studied, only that of Barton Seagrave (a mile or two from Kettering) showed a central tower,—a small Norman church, built no doubt before even the rudimentary stone spire had been introduced. In truth, the excellence of the towers and spires is generally not carried into and through the rest of the buildings. The good ashlar has seemingly given out in many cases, and a less complete and noble class of work been the result. Saxon work is found at Earls Barton and Brixworth. The Transitional (Norman to Early English) nave arcades at Rothwell might fit a large minster, and there are also one or two towers and various other remains of this date scattered about. The greatest architectural movement took place, however, in the Early English era (about 1230 to 1250), when many churches were founded and others rebuilt. Decorated additions and insertions are frequent: the remarkable little Church of Wimmington, Beds (half a mile from the border, and about two miles from Rushden), is throughout of the same Late Decorated date, even down to the font, and is said to have been built and finished within two years. In the Perpendicular period, dissatisfaction with the lighting heretofore enjoyed led to the introduction of the clearstory; few churches in the county being left untouched. The sudden transition from the old high-pitched to the flat roofs that became customary probably originated in the desire not to dwarf the towers,—designed before the clearstories came into fashion. Mr. Sulman directed attention to the special features found at each place; among the rest the tombs at Brington; the farm-house at Yardley Hastings; the strainer arches at Easton Maudit, Rushden, and Finedon; the strange, once-inhabited tower at Irthlingborough, were noticed. Also the characteristics of the perfect west end of Raunds, locally known as "The Gentleman," as contrasted with "The Lady," at Stanwick,—that almost unique octagon tower and spire, with its wonderful delicate grace. Some remarks were made on the subject of rough masonry in the interior of churches, it being maintained that the architecture must be bold and broad to stand the test of proximity to such unsmoothed surfaces, and that rubble may be too rude to be safely shown in any interior. Also that there is little doubt that in the majority of cases plastering, whether for painting or for smoothness, was contemplated, in many instances from the first, and actually put on very frequently for the latter reason only by the Mediæval builders. External variegation with bands, of rich brown ironstone alternating with white stone, is found in the towers of St. Peter, Northampton, and Irchester (noticeable also as the most slender spire in the county). Of internal wall-painting many interesting portions of the Early English well-drawn figures and conventional foliage remain at Burton Latimer (four miles from Kettering), illustrating the legend of St. Catherine; and at Great Addington and Barton Seagrave churches bits of the decoration may be seen, giving fair promise of good success from judicious scraping. At Wimmington some of the original Purbeck paving quarries remain in various parts of the floor, showing clearly that the designer from the first contemplated the present slope from the west up to the east end,—a plan tried also at Rushden, but in neither case (Mr. Sulman thought) with good result. In civil architecture the quaint, very picturesque, never-completed, ruined Late Elizabethan Market-house at Rothwell was described;—its plan being simplicity itself,—an oblong, with an oblong projection in the centre of each side and each end,—the lower part with open arches all round, and the general design very pleasing.

THE GUILDHALL, TEMPLE BAR, NEW LIBRARY, AND CITY TEMPLE, AT THE COURT OF COMMON COUNCIL.

AT the last meeting of the Court of Common Council, attention was called, by Alderman Sir Francis Truscott, to the dangerous condition of the council-chamber. Some of the walls, he said, were much cracked, and the architect had to make an examination of the building before the meetings of the Court, in order to see whether it would be safe for them to assemble in it.

Mr. McGeorge said the City Lands Committee would look into the matter. He expressed his opinion that the council-chamber was not large enough, and that the committee-rooms were inadequate.

Mr. Pedler said, notice had been sent to some builders in London, asking for tenders for the erection of the new Law Courts. He asked the chairman of the City Lands Committee if his attention had been called to the circumstance. The proposed building would very much dwarf Temple Bar.

Mr. McGeorge said the Government, under the Act obtained for the construction of the Law Courts, had power to remove the Bar, but only with the consent of the corporation. He apprehended the corporation would not wish to see such an interesting memorial removed.

Replying to Mr. Clark, Dr. Sedgwick Saunders said the architect was devising means to improve the ventilation of the new library, which was admitted to be defective.

Mr. Deputy Fry moved, pursuant to notice,—

"That the church and congregation connected with the Poultry Chapel having purchased of the City a freehold site on the Holborn Viaduct, at a cost of 25,000*l.*, upon which they are now erecting a church, to be known as the City Temple, designed (exclusive of large provision for day and Sunday schools) to accommodate 2,500 persons, and involving an expenditure of more than 31,000*l.*, thus making a total minimum outlay of 56,000*l.*, this Court being desirous of evincing its interest in so great a movement, and in recognition of the public spirit displayed in the determination to perpetuate a long-existing connexion with the City, do present to them a pulpit, to be for ever held as the commemorative gift of the Corporation of London; and that it be referred to the City Lands Committee to carry the same into effect, at an expense not exceeding 300 guineas."

The hon. deputy said that the congregation had received upwards of 50,000*l.* for the site of their late chapel, and, instead of removing to the suburbs, where land was cheap, they had determined to remain in the City, although a much larger expenditure was thereby entailed.

The motion was opposed; and Mr. Shaw said that in 1820 the site of the Poultry Chapel was bought for 2,000*l.*, and the congregation, after having had the use of it for fifty years, had been paid upwards of 50,000*l.* for it. With regard to the site on the Viaduct, if it had been sold at the same rate as other land in the neighbourhood, it would have realised 15,000*l.* more than the City had received for it. If the money were to be voted as a bonus, what were they to say to Negretti & Zambra and other purchasers? He thought a more legitimate proposal would have been for the gentlemen connected with the chapel to come forward and offer to place a stained-glass window in Guildhall.

Mr. Bedford said if the motion were carried, he would ask a contribution of 500*l.* to St. Sepulchre's Church for their public spirit in throwing a piece of ground into the public way, and in consideration of the circumstance that they were about to erect a handsome new tower.

The motion was ultimately carried.

A NOTE FROM ITALY.

A CORRESPONDENT, dating from Rome, writes:—Mrs. Salis Schwabe, who passes her life in doing good to the poor and the miserable of this world, has been striving for the last ten years to get a better state of things introduced into Naples for the very poorest,—the young lazzaroni, but obstacle on obstacle arose, and only last year did she obtain what she wanted, a *locale* in which to begin her work. The municipality gave her a convent that had been confiscated, and the Government promised her 1,000*l.* to put it in order; so the affair was begun last February, and then in May she had to be in England. The architect, siding, it is to be feared, with the party which is inimical to the cause of progress and education, left the building much in the same state as when Mrs. Schwabe left; and, in a state of desperation, she, not being able to leave England, induced a friend to try and finish and furnish the schools. The present municipality, elected after the triumph of the clerical party in the summer, had put a suspension on all the works, and nothing was being done. Money had been misspent, and those interested have been forced to go to Rome, and put themselves under the mercy of the Ministers and Government, and, as I now write, a telegram is expected to state the result.

The misery and degradation in some parts of Naples are indescribable; and the clerical municipality has deducted from the allowance for education 42,000 francs a year. The man who has done this said, in full council, he was not sure whether education did not help to fill the prisons; that only religious teaching could help the poor to be better.

A week ago the first stone was laid in Rome of the American Episcopal Church, to be dedicated to St. Paul. It is to be built at the angle of Via Nazionale and Via Napoli; the former is the new street now being built leading from the Santa Maria Maggiore to the Corso. The position is excellent. The ground cost 60 dollars a mètre; the whole, 20,000 dollars. The church is to be in the Italian Gothic style, and to hold about 800 people. The Americans have thus gained the initiative in planting *within* the walls of Rome their Episcopal Reformed Church. The stone was laid on St. Paul's day, and English and American clergy joined in the ceremony, the Bishop of Derry officiating.

It is to be hoped the English, though more suitably supplied with a temporary church than the Americans have been, will not be long before collecting the required sum for the commencement of their church. The overcrowded state of the English church shows the necessity of providing a large and, it may be hoped, a handsome edifice.

The weather has been damp and unhealthy in Rome, but a fine day does much to raise the tone of movement and gaiety. New buildings are progressing.

WOKING BRIDGE ACCIDENT.

A CORRESPONDENT sends us rough sketches of some existing bridges on the river Wey, and says,—"I presume they have been continually patched for the last half-century, a new rail or girder being put in when one gives way and not before. There are some half dozen bridges of this pattern over the river Wey above Woking, and three above Guildford; the first one at Broadford, near Shalford Railway Station, being very rickety and unsafe for a public thoroughfare." If the sketches give a correct idea of the structures in question the sooner the Highway Board or other competent authority direct the attention of the proper officer to them the better. We shall otherwise soon hear of another accident in this neighbourhood.

ACCIDENTS.

Destruction by Fire of the North Surrey District Schools.—One of the largest fires known for some time in Lambeth took place early on Saturday morning, in last week, and resulted in the total destruction of the North Surrey District Schools, in the Anerley-road. The building consisted of two floors, about 60 ft. by 60 ft., used as workshops for shoemakers and tailors, and was entirely burnt out, and the roof was burnt off the carpenters' workshops, &c., adjoining, and the contents damaged by fire and water. The cause of the fire is unknown.

Damage to Ryde Pier.—About midnight, on Wednesday in last week, a large barge in a gale struck against the pier with great violence, and damaged the structure for a distance of about 30 yards, tearing up the rails of the pier tramway. The ship, which was laden with timber, and bound for Poole, was completely dismasted.

Fall of Machinery into the Usk.—A somewhat remarkable accident took place last week, near Newport, in Monmouthshire. An iron bridge over the River Usk is in the course of erection on the Pontypool and Caerleon Railway, and a stage was placed over the water to carry certain heavy machinery used in pile-driving. From some unexplained cause the stage gave way, and precipitated the machinery and a number of the workmen into the Usk. One is known to be drowned, and two are missing. Four others were injured,—two seriously.

Partial Fall of a House in Bradford.—The back of a building in Ranter-court, Craven-street, Wapping-road, fell outwards, and six people who were in the house had narrow escapes. The house is one of a block of five situated in Ranter-court. Although antiquated and somewhat dilapidated in the exterior, in the inside they appear to be substantial enough. At the back of this block a large weaving-shed is in course of erection, and the necessary excavations for building purposes are being actively proceeded with. The foundation has been dug almost close in a line with the back wall of this block of dwelling-houses, and it is thought that this may in some way have been the cause of the accident.

Fatal Scaffold Accident near Bishop Auckland. An inquest on the body of Jesse Burge, who met his death by the falling of a scaffold, at Coundon new church, near Bishop Auckland, has been held at Old Counden, before Mr. Thomas Dean, deputy coroner. The evidence of Mr. Townsend, clerk of the works, went to show that deceased and a man named Rule were engaged plastering the ceiling, and were on a scaffold which appeared sufficiently strong for the purpose. He had a short time previously ordered them to stop work, as the frost was severe, and they said they would just use up what lime they had up. They, however, continued to go on, and a labourer named Alexander Davidson, had taken up a hod of lime, about nine stone. He threw it down on the scaffold, and the two plasterers both stepped up at the same time to get some, when a beam—one of the main supports of the scaffold,—gave way, and the whole three were precipitated to the ground. Burge fell with his neck upon a wall intended to support the floor, and fractured his neck. Several beams also fell upon him. The other two were severely injured, and lie in a precarious condition. The jury gave a verdict of "Accidental death."

SCHOOL BOARDS.

Metropolitan Board.—At the last usual meeting of the School Board, it was resolved "That the tender of Mr. W. Shepherd, of 101, Bermondsey New-road, amounting to 6,728*l.*, for the erection of a school to provide accommodation for 899 children on the site in Battersea-road, be accepted; and that the tender of Messrs. D. King & Sons, of 5, Mitre-street, Aldgate, E.C., amounting to 6,628*l.*, for the erection of a school to provide accommodation for 1,088 children, on the site in Olga-street, Roman-road, be accepted." It was further resolved,—That the tender of Mr. W. Webster, of 8, St. Martin's-place, Trafalgar-square, W.C., amounting to 617*l.* for excavating the foundations for the Board offices on the Thames Embankment site, be accepted.

Carlisle.—The discussion of alterations of the school plans was the first business. Mr. Hannah said there had been some new schools at Penrith constructed on the L shape, which he objected to. In order to see those schools he went to Penrith, and had the advantage of being there on the same day as Her Majesty's Inspector. He found the schools in many respects fitted for their object, but there were also objections to them. The master of the Penrith schools had not much objection to the L shape, but he thought it was very much too narrow, and was sure that if they went in for a wider school, it would be much more favourable. Those schools had been built according to the Government regulation 20 ft., but he trusted he would induce the Board not to adopt that width. There was now much agitation on this point, among other places, at Halifax and Leeds, the Boards at which places had sent a deputation of five members to Mr. Forster in London. Those Boards favoured a width of 30 ft. Mr. Forster had stated that those regulations came into force at the very beginning, before he had gone into office at all, when Parliament was only granting certain sums, and these regulations might have been passed to spare the money. He added that the Boards ought now to be allowed by their lordships to put up buildings which they considered best fitted for the district. There was another point, that of light, and he was a strong advocate for as much natural light as possible. He moved that the width of the boys' and girls' schools be 25 ft., and the infant schools not less than 30 ft. The chairman seconded the motion, at the same time expressing his approval of the L shape. Mr. Birkett, who was present, explained that in drawing the plans he had gone according to the regulations of the Department, not having felt himself justified in departing from them, though he quite agreed with all that Mr. Hannah had said. The original width was made that the number of pupils accommodated on one side of the school should not be more than on three rows of desks. If they increased the width to 22 ft. it would require four rows of desks, and if increased to 25 ft. it would require five rows of desks to accommodate the pupils; so that in gaining the advantage of having more room for class teaching they lost the advantage of the other mode of teaching in having such a great depth of desks. His own inclination was to adopt a width of 23 ft., with four rows of desks. The broader it is the shorter it will be, as the area must necessarily be eight superficial feet to each pupil. Considerable discussion ensued, and it was at length decided to adopt the L shape, that the boys' and girls' school should be 25 ft. wide, and that the infant-school should be 28 ft. wide, Canon Curry dissenting from the latter portion of the resolution, thinking that the width of the plans, 26 ft., was sufficient. Considerable discussion ensued on details, and it was determined that the vice-chairman, Canon Durham, Mr. Wrigley, Mr. Clarke, and Mr. Hannah, be appointed a committee to consult with the architect and submit his plans as amended to the next meeting.

PROPOSED CATHEDRAL CHURCH OF ST. MARY, EDINBURGH.

SELECTED DESIGN: SIR G. GILBERT SCOTT, R.A., ARCHITECT.

ANALYSTS AND MEDICAL OFFICERS OF HEALTH.

Wandsworth District Board of Works.—The general purposes committee submitted Drs. Muter and Moore as candidates for the office of analyst, and the former, who has already been appointed to the parishes of Lambeth, Camberwell, and St. George the Martyr, was selected. It was then agreed, upon the motion of Mr. Hodgson, that the payment should be by fees, and on a scale to be hereafter determined by the Board.

Whitechapel District Board of Works.—Dr. Tidy has expressed his willingness to undertake the duty of analyst to this board for six months, at the following rates:—For the first hundred cases, at the rate of one guinea for each analysis; for the next fifty cases, at the rate of half a guinea each; and for any number of subsequent cases that might occur during the half-year at the rate of 6s. for each. Dr. Tidy's offer was accepted. In St. Pancras the fee has been fixed at 2s. 6d.

The St. Pancras Vestry have appointed Dr. Stevenson, the medical officer of health for the parish, to the post of analyst. He is to be paid "for such reasonable laboratory and other expenses as may be actually incurred by him during the ensuing year." It is provided, however, that the expenditure must be limited to 100*l*. At the end of the year the vestry will reconsider the whole question, with a view to make a permanent arrangement.

In the Bethnal Green Vestry Dr. Jarvis, medical officer of health, who was appointed public analyst for the parish, has submitted a list of articles required for carrying out the work of that office, and asked to be empowered to fit up a laboratory and purchase the necessary instruments, at a cost not exceeding 100*l*. A committee of seven members was appointed to make inquiries and advise the Board upon the matter.

Marylebone Vestry.—A communication has been received from the Local Government Board assenting to the appointment of Dr. Whitmore as food analyst, &c., for the parish.

The Holborn and St. Giles's District Board of Works.—This Board has agreed to unite with the Clerkenwell Vestry in the joint appointment of an analyst, and they have resolved to apply to Dr. Letheby to allow his name to be brought forward as a candidate.

Miscellaneous.—The St. Saviour's District Board have agreed to pay Mr. Bianchi a nominal salary of 50*l*., as analyst. Dr. Corner, the medical officer of health for Mile-end Old Town, has been appointed also analyst. In Hackney, Dr. Tripe, the medical officer of health, has been elected. In St. George's, Hanover-square, and Chelsea, it has also been resolved to include the office of analyst in the duties of officer of health. The Whitechapel Board have appointed Dr. Meymott Tidy. Dr. Hardwick has been elected for Paddington; Dr. Vinen for St. Olave; Dr. Woodfrede for Poplar; Dr. Letheby for the City; Dr. Bernays for Camberwell; Dr. Pavy for St. Luke's; Dr. Rogers for Limehouse. With three exceptions, the local authorities of each district have elected their own medical officers of health as analysts.

The Gloucester Town Council have had a long sitting to discuss the question of the appointment of a medical officer under the Public Health Act. A committee of the Council had recommended the appointment of an officer for the city only, at a salary of 100*l*. per annum, conditionally upon half the salary being paid by the Local Government Board, and that the appointment be for one year, in order to see how the new system works. This was agreed to. It was stated that the Local Boards and sanitary authorities of the suburban district of Gloucester would probably join with the city, and appoint the same gentleman.

The Carlisle Council.—The Town Clerk, at a recent meeting of council, reported that a meeting had taken place between the Town Improvement Committee and the county authorities, who, however, were not then prepared to recommend the appointment of a public analyst. Mr. Wheatley asked how long they could defer this. Some public bodies had deferred it for an indefinite period, and did not mean to appoint one until they were obliged to do so, or it was pressed upon them till they were compelled to take decisive action; and the county magistrates had given to understand that they did not intend to do it until they were pressed.—The Town Clerk: There is no special time mentioned that makes it incumbent upon public bodies to make the appointments. With regard to the appointment of a medical officer and inspector, the committee had met the rural sanitary authority; but they had no report to make. He believed that the authorities of the several unions communicated with had all declined to join in the appointment of a medical officer.—Mr. Cockburn: There is nothing in the Act to prevent that standing over?—The Town Clerk: No.—The subject then dropped.

Liverpool.—Several cases were recently brought before the Liverpool stipendiary magistrate in which certain tradesmen were charged with selling adulterated butter. All the cases were dismissed by the magistrate, on the ground that the defendants did not appear to have a guilty knowledge that the butter was adulterated. It is clear that if this be the true interpretation of the law, no one can be convicted for the sale of adulterated articles, and the Act might just as well not have been passed. The Liverpool Corporation have appointed a public analyst, at a salary of 200*l*. a year, and naturally they do not look with favour on a decision which reduces their appointment to a comfortable sinecure, and have determined to ask the Court of Queen's Bench for an authoritative declaration of the law.

Bedford Town Council.—At a special meeting of this council, acting as the sanitary authority for the borough, Alderman Bull said that by a resolution of the Board passed some few weeks ago it was decided that the two offices of medical officer of health and analyst for the borough should be held by one gentleman, and he proposed that Dr. Charles Edward Prior should be appointed to these offices. It was then resolved that Dr. Prior be appointed medical officer of health for five years, at a salary of 100*l*. per annum; and also borough analyst for the same period, at a salary of 50*l*. per annum. There were no other candidates.

Berks.—A conference of Guardians of the Poor and the members of the various sanitary authorities in the county has been held at the Grand Jury Room of the Assize Courts, Reading, to discuss the 10th sec. of the Public Health Act, which imposes on the Sanitary Authority the duty of appointing an officer of health, and also an inspector of nuisances, and other officials. The meeting was convened by Mr. Henley, Poor-law Inspector. It was moved:—

"That the several sanitary authorities of the county do for the period of twelve months act independently of one another as regards the appointment of a medical officer of health."

It was also moved as an amendment,—

"That, recognising the principle of combination, it is desirable that the county of Berks be divided into two or more districts, and that the several town and county sanitary authorities be respectfully invited to co-operate in the appointment of a medical officer of health for each district."

Among the speakers was Mr. Walter, M.P., who said that it appeared to him that the Legislature itself was chiefly responsible for the difficulty which they were at present endeavouring to remove. He supported the amendment. Mr. Henley said that at Birmingham the medical officer of health, who was also the public analyst, received a salary of 650*l*.,—500*l*. for being medical officer, and 150*l*. for the office of analyst. After some further conversation, the amendment was carried by 20 votes to 18.

NEW GAS COMPANY (LIMITED) FOR HEATING AND LIGHTING.

A NEW gas company is being formed, with a capital of 500,000*l*., one-half to be issued in 50,000 shares of 5*l*. each, of which 35,000 are offered for subscription. The object in view is to purchase certain patents for 50,000*l*. in cash, and 75,000*l*. in shares of the company, with one-tenth of the surplus profits in every year, after the declaration by the company of a dividend of 25 per cent., and one-tenth of the net proceeds of any foreign patents which may be sold for sums in gross. The chief patents to be used in return for this valuable consideration are what have been known as Ruck's patents. A practicable model gas manufactory has been built at Battersea, and experiments have been there exhibited of the working of the process. Steam (or water of course) is decomposed by highly-heated coke or charcoal, into free hydrogen, mixed with carbonic oxide and carbonic acid gases, and some sulphuretted hydrogen, which last is separated from the gas, but the carbonic gases remain, unless when the carbonic acid is to be removed by the help of caustic soda. The resultant gas is to be used for heating purposes only, as hydrogen gas in burning gives little light but much heat. But the gas is also to be converted into gas for illuminating purposes by being charged with petroleum vapour, which is said to form with the hydrogen a more or less permanent combination, and a rich hydrocarbonaceous gas, yielding a light equal to 16·6 candles burning 120 grains of sperm. Of course the heating gas and the gas for light will require to be separately prepared and distributed in two separate sets of pipes to their respective destinations. The decomposition of water or steam by highly-heated carbonaceous substances into hydrogen and oxy-carbonaceous gases is not new, but there seems to have always been some difficulty until now in making practical use of the process. We may add, that without committing ourselves to the present or any form of the process as an improvement on the usual mode of gas-making, we should be glad to hear of the practical success of any form of gas manufacture which could render us even a little less dependent on colliery-owners and colliers, either for light or for heat.

TECHNOLOGICAL EXAMINATIONS.

THE programme of examinations in the technology of the arts and manufactures of the country, is now ready for issue, and may be had on application to the secretary of the Society of Arts. These examinations will be held annually, in conjunction with the examinations of the Science and Art Department.

In 1873 examinations will be held in the technology of cotton, paper, silk, steel, and carriage-building.

The examinations of the Science and Art Department will be held during the first three weeks of May.

The following prizes are offered by the Society of Arts in each of the five subjects mentioned above:—To the best candidate in honours, 10*l*.; to the best candidate in the advanced grade, 7*l*.; to the best candidate in the elementary grade, 5*l*.; and the Council appeal to the companies of the City of London, to merchants and manufacturers, and to members of the Society generally, to aid them by contributing to the prize fund.

THE OLD MASTERS AND THE WORKING CLASSES.

A CORRESPONDENT calls upon us to urge the Council of the Royal Academy "to set apart a week, or some few evenings before the Exhibition is closed, at half-price, so as to allow the lovers of art among the working classes an opportunity of studying these grand old pictures. I believe the Academy adopts a similar plan in their summer exhibition of modern paintings." We are disposed to think the Academy scarcely needs any urging in the matter. But will the working classes—or, as we would rather say, the wage-class—take advantage of the opportunity if it be afforded? Unless we are misinformed, they do so in the summer only to a trifling extent. They thus weaken the hands of those who would increase their enjoyments and facilities for self-culture.

ACTION FOR SEWER WORK.

WIGMORE *v.* WHITE.—BROMPTON COUNTY COURT.

MR. LAXTON, who appeared for the plaintiff, a builder, of Fulham, in his address to the Court, observed that the action was one of some importance to contractors for making sewers and to boards of works. His client sought to recover the sum of 18*l*. of Mr. White, who, being of the same trade as the plaintiff, should have known better than to have raised any dispute to the claim.

Mr. Wigmore, in reply to questions, stated that some time since he entered into a contract with the parish of Fulham to construct a sewer in the Munster-road, and whilst the works were in progress Mr. White called upon him and informed him he was the owner of several houses bordering on the sewer being made, and it would be a good opportunity to have a drainage from his property run into the sewer, instead of into cesspools, as no doubt the district or parish surveyor would ultimately order a proper drainage to be made; and, acting up to Mr. White's directions, his men made junctions with six houses into the sewer.

The sum claimed was for material, labour, watchman, and other expenses incurred.

In cross-examination, the plaintiff said he had not got

the job specifically that what he did was to go to the parish account. The work he did was certainly not included in the parish contract. The surveyor to the Local Board gave him orders to make junctions into the sewers, but gave him no instructions to do Mr. White's work. If the surveyor had given him any such orders, he should have charged the work to the parish of Fulham, and not to the owner of the houses, Mr. White, and it would, of course, have become part of his contract with the parish. It was immaterial to him which paid him, but unless the surveyor certified to the work done, the parish would certainly refuse to pay for Mr. White's junctions.

Mr. Bean, the surveyor to the Board, confirmed the plaintiff's view of the matter with respect to the parish not being liable for the work under the circumstances stated, and positively stated that the work done was no part of the contract entered into by the parish of Fulham with Mr. Wigmore. It might be, and probably would have been, that if Mr. White had made a formal application to have his houses drained into the sewer, the Board of Works for the Fulham district would have issued orders to have had the junctions made at the cost of the parish, and then the contractor would have been paid extras. But when owners of property gave such orders, the parish of course had no control over the matter, further than the surveyor seeing that the junctions and drainage were properly made.

In answer to the case, the defendant point-blank denied his liability, and contended that the parish was liable. Mr. White also denied giving Mr. Wigmore any orders to do the work for him, for he could have done it himself. He spoke to the district surveyor, and he considered it was being done under his direction; and that when done he should have to recoup the parish the usual apportionment of the cost of the work. Had he thought Mr. Wigmore was going to do the work and then make this claim, he would have let the drains remain as they were, as the drainage answered all purposes. The charge, too, he called exorbitant; and as the ground was already opened, and materials and labour to hand, the sum of 6*l.* would well pay for the work done.

The Judge said he had the most positive evidence that the contractor had no right to do this work at the parish expense without orders from the surveyor, and the surveyor had given no such orders. He also considered that defendant had given the plaintiff the order to do the work, and he was liable to pay for it. With respect to the amount he thought it would bear a little cutting down, and he should make a deduction of 3*l.* Judgment for 15*l.*, with costs of counsel, attorney, and witnesses, which, with Court fees, will add about 10*l.*, besides defendant's solicitor and expenses.

BETHNAL-GREEN MUSEUM.

SIR,—Permit me to correct an accidental error in the article on Bethnal-green Museum in your last week's issue. The two noble Vandycks, Philippe le Roy and his wife, are not "lent by the King of Holland," but, like all the other pictures, by Sir Richard Wallace. The note in the catalogue, by which the writer seems to have been misled, "from the collection of the King of Holland," refers to former and not actual proprietorship.

C. C. B.

EXPENDITURE OF METROPOLITAN BOARD OF WORKS.

SIR,—At the last meeting of the City Commissioners of Sewers, the chairman said:—

"Now, let us see what other public bodies are doing. I take up the accounts of the Metropolitan Board of Works—not in any bad spirit, but to draw a comparison between that body and this Commission. I find that they have expended on the fire brigade 15 per cent. of the receipts; on works 32 per cent.; and interest 53 per cent. of the whole expenditure. That is a startling statement. We do not expend 5 per cent., or little more than 2½. The Corporation are nearly as bad as the Metropolitan Board of Works; they spent one million in interest on the Holborn Valley Improvement. I hope you will give your careful attention to this."

Allow me, as a ratepayer, to call attention to this. Out of every shilling of the rates collected we have to pay 53 per cent. for interest, while the inhabitants of the City only pay from 2½ to 5 per cent. This is not the way to encourage either art or labour, at this time when everything is dear, and no wonder that rates and taxes are high when more than half is spent in interest on loans.

JOSEPH ASH.

ENGINEERS' ACTIONS.

BIRCH V. THE EXMOUTH DOCKS COMPANY.

THIS action (in Court of Queen's Bench) was brought by the plaintiff to recover a certain sum of money for professional services rendered by him as engineer in the construction of the Exmouth Docks. The defendants pleaded not liable.

The plaintiff, residing in Victoria-street, Westminster, brought the action to recover a sum of 2,189*l.*, commission at the rate of 5 per cent. on works executed by Mr. Jackson, a contractor, in constructing the Exmouth Docks. In the course of the evidence it appeared that there was actually no company, and also that there were no shareholders. Mr. Jackson, the contractor, undertook the construction of the docks and execution of the works for a number of shares as security, amounting in representative value to 60,000*l.*, and for 15,000*l.* worth of debentures, and on the completion of the works to hand the docks over to any company that might be formed. The shares had never been disposed of. They had been deposited as security for advances by the contractor, who was still in possession of the docks, which had been opened in due time for traffic, but the gross takings last year amounted to only 970*l.* By a subsequent engagement the contractor was to pay the engineer's, the secretary's, and the directors' fees, and he qualified the directors, who were his nominees, in order to carry on the works.

The Lord Chief Justice, in summing up the evidence, said there could be no doubt this was a contractor's or paper company. There was *primâ facie* evidence that the plaintiff was appointed by the company, but the defendants contended, although there was a formal appointment, there was a distinct understanding that he must look to the contractor for payment. The engineer, the solicitor to the company, and the secretary went to Parliament and obtained a Bill without a single shareholder, and the plaintiff must have known that this was Jackson's speculation and enterprise.

The jury retired, and after two hours' consideration of the evidence passed in the privacy of their room, returned into Court and gave a verdict for the defendants.

"WARMING."

SIR,—Your correspondent on the above subject will find the benefit he and others desire in making coal go as far as possible in a room fireplace, by using Milne's Patent Pyro-Pneumatic Room Grate, which has been adopted by Government, and is fitted into several public and private buildings. The patentee is preparing tubes to join those of the grate, so that one small fire shall warm three apartments, and in this special case partly heating a passage in their course to the rooms.

Several experiments have proved that an ordinary-sized room can be warmed to 57° Fahr., the outer air being 29°, consuming only one pound of coal per hour, while with a moderate fire 5,000 cubic feet can be raised to 63°, the outer air being 34°.

The grate fits into a common fireplace complete in itself. In party-walls, the tube communicating with the outer atmosphere is readily introduced behind the base-plate.

ANOTHER READER.

THE STAGES AND SEATS ON THANKSGIVING-DAY.

IN the Court of Queen's Bench, on January 31st, Mr. H. James, Q.C., on the part of the Corporation of the City of London, moved for a rule calling on Mr. E. B. Gammon to show cause why an award should not be sent back to the arbitrator for an amendment, or set aside, upon the ground that there had been a mistake in making it. The facts were these:—"Upon the occasion of the Queen and the Prince of Wales going to St. Paul's upon the Thanksgiving-day, the Corporation employed Mr. Gammon to erect certain stages and seats. Afterwards some dispute arose as to the amount to be paid, and the matter was referred to the arbitration of Mr. I'Anson, architect. He awarded Mr. Gammon 2,082*l.* It now, however, appeared that, by some accident, credit had not been given in the award for a payment of 500*l.* by the Corporation on account, which had been made before the reference.

The Lord Chief Justice.—You are willing to pay the 1,582*l.*, about which there is no dispute?

Mr. James.—At once.

The Lord Chief Justice.—Then take a rule to show cause; but let it be part of the rule that the 1,582*l.* be paid to Mr. Gammon.

Rule granted.

BOND-STREET IMPROVEMENT.

SIR,—In November last the Clarendon Hotel, Old Bond-street, was sold by auction, and I now hear that it is intended shortly to pull it down and rebuild, with shops or otherwise. The site has the immense frontage of 200 ft. in all, and it runs up to a part of the street which is very inconveniently narrow. Is this not an excellent opportunity to widen the street, and cannot the extremely wealthy parish of St. George, Hanover-square, afford to do this with or without the help of the Metropolitan Board of Works? The poor-rates of St. George are known to be among the very lightest of the West-end parishes. Bond-street, in the neighbourhood of the Clarendon, requires to be widened to the extent of 10 ft. or 15 ft., especially in that part near to Grafton-street, where it is wholly inadequate to the traffic. In the season of an afternoon there is a constant blockade, and the pavements are as insufficient as the carriage-way.

ESTATE AGENT.

COMPETITIONS.

Essex.—The Birdbrook School Board have selected the design sent in by Mr. Frank Whitmore, of Chelmsford, architect, for the proposed new schools and master's residence to be built in that parish.

Palmer's Endowed School, Grays, Essex.—The designs of Mr. Thomas Rook Maples, of London, have been selected. Thirteen architects competed; the designs of Messrs. Wilson & Wilcox were considered second.

STABLING AT GREY TOWERS, NEAR MIDDLESBROUGH.

THE comfort and convenience of a *covered* stableyard have been exemplified during the last season's frightful rainfall in one which has been carried out, during the year just passed, for Mr. W. R. J. Hopkins, of Grey Towers, in Cleveland, from the designs of Messrs. Ross & Lamb, of Darlington. Entering through a spacious archway, beneath a clock-tower, the visitor emerges into a stable-yard, entirely covered with a glass roof, sufficient ground space being allowed to drive even an unruly *four-in-hand* into, round, and out again. The value of being able to drive into immediate shelter is felt both by host, visitors, grooms, and helpers; doubtless, also by heated and exhausted horses, as the latter are apt to suffer from the chill and exposure consequent upon unharnessing in severe weather.

The range of buildings comprises stall and loose-box accommodation for about twenty horses, with ample coachhouses, harness-rooms, washing and cleaning rooms, smithy, &c.; also two dwellings for coachman and grooms; the whole being constructed at a cost of about 5,000*l.*

"I KNOW A HAWK FROM A HANDSAW."

BY an accident I did not see the *Builder* of January 11, until last night. On the 21st of May, 1843, a friend of mine, who is a native of Norfolk, made the following memorandum in my "Shakspeare":—

"The expression in Shakspeare, 'I know a Hawk from a Handsaw,' should be a 'Hawk from a Hanser,' *i.e.*, I know the heron from the hawk that pursues it. Hanser is the common word for heron in Norfolk, and other parts of England.—G. P. B."

R. A. P.

TIMBER IN FLUES.

A FIRE has lately occurred in an old house which I inhabit, by which it is proved that a great deal of *timber* is contiguous to the flues of the chimneys.

Can you suggest what remedy I have with regard to making the *flues* secure? D. F. G.

*** A careful examination should precede advice. The introduction of flue-pipes might be found practicable and sufficient.

NORTHUMBERLAND HOUSE.

THE Metropolitan Board of Works at their last meeting adopted a report of their committee, who have been negotiating with the Duke of Northumberland or his solicitors for the transfer of the Northumberland House property at Charing-cross, to the Board for the Thames Embankment approaches. The Duke was willing to sell the property for 500,000*l.*, and the committee to recommend its purchase for that sum. The Board, in adopting the report, have agreed to refer the subject back to the committee, with instructions to carry out the recommendations of the report.

We are not glad that the old façade is to come down. We must look into the matter.

THE EFFECT OF CHARCOAL ON PLASTERING.

SIR,—Your correspondent "L. L." in your last impression asks about a remedy for injury to plaster-work arising from the sulphur emitted by burning charcoal in his kitchen.

As sulphuric acid acts immediately in destroying all animal and vegetable organism, the hair which should be in ordinary plaster would furnish the means of disintegrating the fibre of the plaster, as well as acting on the surface of the same injuriously, if it is unprotected by any covering of a character sufficient to resist the action of the gas.

No doubt, Keene's, Parian, or Martin's cement, would be sufficient, or a coating of the same, from ¼ in. to ½ in. thick, on the surface of the ordinary plaster-work; but pure, coarse, plaster of Paris, would be cheaper, and would suit the purpose, or a coating of the same about ¼ in. to ½ in. on the surface of the ordinary plaster would do.

Of course, *pure water* must be used in all cases; foul water would furnish material for the sulphur to act upon.

JOHN DAVIDSON.

CHURCH-BUILDING NEWS.

Manchester.—The new church of St. Martin, German-street, Oldham-road, has been consecrated. The new parish is composed of part of St. Peter's, Oldham-road. The site cost 1,600*l.* The church consists of nave, 30 ft. wide, and aisles and chancel. The tower (the spire to which is still wanting) and main entrance are placed at the German-street end of the north aisle, and nearest to Oldham-road. A second entrance is provided from German-street into the south aisle, and each of these protected by an inner wooden porch for the prevention of draughts. The church accommodates 531 adults (320 of the sittings being wholly free and unap-

propriated), and cost, including tower, under 3,000*l*. The front, next German-street, and the tower are of Pierrepoint walling, with stone dressings, and window and door tracery.

York.—St. Martin's Church, Coney-street, which has been long in the hands of the restorers, is now completed, and opened for divine service. The additions, and in some instances transformations, are many, and some of them are works of an ornate and expensive kind. An entirely new stained-glass window has been put in at the east or sanctuary end, and a new organ has been placed in the church. The east window is the work of Messrs. Heaton, Butler, & Bayne. This window consists of five principal lights, and each of these contains a couple of picture panels of sacred pictorial subjects. The smaller top-lights are filled in with stained glass geometrical figures at present; subsequently, we believe, to be supplanted by designs in accord with the pictures in the large lights below them. The seats for the congregation are all new and are open, of oak, carved at the ends; and the choir-stalls are the same. The roof,—of pitch-pine, stained—is new, and covered by lead externally. The seats, choir-stalls, screens, reading-desk, pulpit, and roof-work, have all been done by Mr. Wignall, joiner, while the carving of the woodwork has been done by Mr. Jones, wood-carver. The window-glass, stained and otherwise, has been taken out and cleaned, and new leaded, and replaced by Mr. Knowles, glass-stainer. New gas-standards, rising from the floor, in tracery designs up the standards, topped by gaseliers have been placed in the church by Mr. Holmes, gasfitter. A row of gas-lights has been placed under each sill of the clearstory windows at the east end, for the purpose of lighting up the sanctuary and choir-stalls. All the masonry has been done by Mr. Keswick, builder. The new organ, by Brindley & Forster, of Sheffield, having decorated metal pipes on its west and south sides, has been placed in one of the arcades of the north aisle at its east end. The whole outlay for the restoration of the church, inclusive of the new organ, is about 3,500*l*. The parish subscription to this amount was 800*l*. The organ cost about 500*l*. out of the sum total.

Winkleigh (*Devon*).—All Saints', Winkleigh, now in process of restoration, stands upon high ground, and not only are the hills of Dartmoor seen distinctly from its site, but from the top of the tower no less than twenty-four parish churches may be counted. Several years ago Mr. Ewan Christian, architect, restored the chancel, and now the rest of Winkleigh Church has been almost entirely taken down, and is being rebuilt from the designs and under the supervision of Mr. John F. Gould, of Barnstaple. The north wall and the lower part of the tower are old; so also are the granite piers and arches of the arcade separating the nave from the north aisle, and about half the roof-timbers: excepting these and a few other minor items, all the work will be new. The upper part of the tower has been rebuilt, and surmounted by carved pinnacles. It rises to a height of 80 ft., and has been farther strengthened by new buttresses. These latter, as well as the belfry windows and the new windows of the church, are of Hatherleigh stone, the walls of the structure throughout being of local stone, quarried in the immediate neighbourhood. Middlecott stone, a warm, red material, is being introduced in the south porch and other parts of the building. The tower will be utilised by a peal of six new bells, supplied by Messrs. Mears & Stainbank, of Whitechapel; and there will be a new clock, by Funnell, of Brighton. In plan, the church consists of chancel, nave, north aisle, the Loosedon aisle, organ-chamber, vestry, and west-end tower. The interior is still in the hands of the artificers. The roof, partly old, is of English oak. The effect of this roof will be enhanced by painted decorations. A considerable amount of mural decoration is also contemplated. The seating is to be all of the best English oak. A new organ is in the hands of Messrs. Hill & Sons, of London. It will have a case of oak, designed to harmonise with the other fittings of the church, and will be placed in the new organ-chamber on the north side of the Lady-chapel or north-choir aisle. The architect employed is Mr. John F. Gould, of Barnstaple. He is represented upon the spot by Mr. George Vickery, as clerk of the works. The stone and wood carving, of which there is a great deal, has been placed in the hands of Mr. Harry Hems, sculptor. Mr. J. Dendle, of Barnstaple, builder, has the contract for all the carpentering and joiner's work. Mr. G. H. Pinckard, of Godalming, Surrey, is the donor of funds for the carrying out of the restoration; and the organ is the donation of a lady connected with his family. It is expected that the church will be ready for opening about midsummer.

Hastings and St. Leonard's.—It is in contemplation to erect a second church in St. Paul's parish, mainly for the use of the poor who at present attend divine worship in St. Paul's Schoolroom. The present parish church is found to be totally inadequate to the demands for seats made upon it, and another church is to be erected in a less-fashionable part of the parish. To aid in this work the rector appeals to his parishioners at large. It is proposed to purchase an iron church for 900*l*., and towards this amount the rector has himself contributed 200*l*. There is no doubt, it is believed, but that the money will be almost immediately forthcoming.

Ticehurst.—St. Augustine's Church, Flimwell, has not been built many years: it is a district church carved out of the old extensive parish of Ticehurst. The present incumbent (the Rev. J. C. Eagleton), aided by several friends, has raised funds for putting a steeple on the square tower, and for having a peal of bells. The works were being performed by Messrs. Carrick & Balcomb, builders, Ticehurst. On erecting the framework of the steeple, and at the point of rearing the main upright centre-piece of timber, the gear work gave way, and it was precipitated with great force into the roof of the church, knocking a hole right through, shattering the slates in all directions, and the pieces of timber that fell snapped, from the great force, in four distinct pieces, like so many pieces of tobacco-pipe. This will be a loss to the contractors.

Hadnal (*Shropshire*). — The parish church, which has been closed for some time past for the purpose of undergoing a complete restoration, has been reopened. The improvements comprise the removal of the gallery and pews, and of the plaster from the internal walls, which have been repaired and pointed, dressed stone being substituted for plaster in the window jambs, heads, and sills. New boarded and quarry floors, and a new warming apparatus, have been provided; and the nave is fitted with convenient seats of pitch pine, varnished. A trench has been formed round the church, and the churchyard has been drained. The contractors were Messrs. Bowdler & Darlington, who have carried out the work, from the design and under the superintendence of Mr. Edward Haycock, architect. The warming apparatus was supplied by Mr. W. Dodwell. The total outlay has been 321*l*. When funds are forthcoming, it is intended to add a small chancel (for which plans are already prepared), and, if possible, a new vestry and organ-chamber.

Bradford.—A meeting in furtherance of a project to erect a new church in connexion with St. Jude's, has been held. The Rev. J. Eddowes, who presided, said it was intended to build a useful church, with clergy-house and schools. The site has been secured, and part of the purchase-money paid. A resolution was passed, pledging the meeting to use its best endeavours to erect a church, to be dedicated to St. Mary Magdalene, in the White Abbey district; and a committee was appointed to carry out the resolution. About 1,700*l*. were subscribed at the close of the meeting.

SCHOOL-BUILDING NEWS.

Great Missenden (*Bucks*).—Two new national schools, with class-rooms and teachers' residences, were on Thursday, the 16th ultimo, opened here with considerable *éclat*, by the Duke of Buckingham and Chandos, who was supported by a large number of the local nobility, clergy, and gentry. The buildings are intended to supply the educational wants of Great Missenden parish, under the national system. The school-rooms accommodate together 210 scholars. They are of brick and stone in Early English design, with uncoloured brickwork inside. The cost of the school-rooms only has been about 4*l*. per head, and the total expenditure somewhat under 1,500*l*. The site of half an acre at Lee was presented by Mr. C. G. Du Pré, M.P. The contractor was Mr. F. Taylor, of Uxbridge; and the architect, Mr. Arthur Vernon, of High Wycombe. The whole of the works under the contract were executed at about 25*l*. under the stipulated sum.

Amersham.—A new National School is to be erected at Amersham, Bucks, to accommodate 284 children, and an Infant School at Woodrow, in the parish, for thirty. It is expected that this same voluntary effort to provide the requisite schools will be much cheaper than to allow the formation of a School Board. Half an acre of the glebe land is secured in a favourable position, and the works are expected to be commenced forthwith. The commission has been entrusted to Mr. Arthur Vernon, architect.

Westerdale (*Yorkshire*). — Contracts having been signed, the new school is to be commenced at once. The plans and specifications have received the seal and approval of the Committee of Council on Education. The school, designed by Mr. Henry Perkin, of Leeds, is in the Gothic style, and is to be built of hammer-dressed wall-stones, with bosted-hewn dressings, having open-timbered roof, plastered between the roof spars, covered with Welsh slates, with bell-cote on the ridge of dressed timber, slated, and finished with iron terminal. The plans were submitted in the autumn by Mr. David Hartley to the Hon. Colonel and Lady Caroline Duncombe, who expressed their entire approval of them, and the funds for the erection of the school are almost entirely raised.

FROM SCOTLAND.

Leith.—The Post-Office authorities are endeavouring to procure a site for a new post-office of much larger dimensions than the very small existing one in Bernard-street. The building plans are in course of preparation, and the erection will, it is understood, be of a handsome, if not highly ornamental, character, and will be within easy distance of the Exchange Buildings and the Corn Market.

Castlecary.—For many years past extensive mining operations have been carried on in the neighbourhood of Castlecary Station, on the Edinburgh and Glasgow section of the North British Railway, and in the course of these operations the limestone—the mineral wrought,—has been excavated for some distance underneath the railway. About the new year a "sit" took place, and in consequence the whole railway track for about a quarter of a mile subsided to the extent of nearly 2 ft. Fortunately, the trains which passed over the place met with no interruption before the mishap was discovered. The station-house and offices were very severely injured by the occurrence, and in some places openings occurred through which a man could thrust his arm. In fact, the station altogether presented a very dilapidated appearance. In a short time the railway was repaired, but fears were entertained of a further subsidence, which has taken place this time to the eastward of the station, and stretching towards the lofty viaduct which spans this part of the glen. The subsidence was about 2½ ft. in depth, and of considerable length, and a large body of the *employés* have been busy raising the line to its normal level. Although this subsidence reached very close to the viaduct—one of the highest on the line,—it is not considered probable that it will go farther in that direction, as the bridge is resting upon the solid, and for some distance the strata are intact. Curiously enough, by the last "sit" the condition of the station-house has been much changed, and the wide openings which were previously made have to a great extent been closed by the stones regaining their old places.

Glasgow.—A meeting of gentlemen interested in the formation of a Technical College in Glasgow has been held. It was stated that 12,000*l*. have already been subscribed. Various suggestions and proposals as to the scope and nature of the institution were made, and a few additional members of committee appointed.

Keith.—The new town-hall, the gift of Mr. William Longmore, banker, Keith, has been opened. Mr. Longmore at the opening handed over the titles of the property to nine trustees for the behoof of the town and parish of Keith. The hall is expected to cost 2,000*l*. A portrait of Mr. Longmore, which will cost 150*l*., has been presented to that gentleman as an acknowledgement of his gift.

Liverpool Architectural and Archæological Society.—The paper read on Wednesday evening was by Mr. Samuel Huggins, "On the Revival of Art in Liverpool." The council are arranging to hold a *soirée*, in April next, commemorating the twenty-fifth anniversary of the society.

Books Received.

Manual of Mythology. By Alexander S. Murray, of the British Museum. London: Asher & Co. 1873.

Although founded on a popular German work, "Der Olymp," written by Herr Petiscus, Mr. Murray has made this manual his own by general revision and a new introduction. He has added too, a brief account of the Scandinavian, Old German, the Indian, and Egyptian mythologies. Read as a whole, the book gives a very interesting account of the growth and influence of the early religions.

In the myths, awkward as some of them may sound in modern ears (to a people more fastidious as to words than acts), morality or immorality was scarcely involved. For instance, when we find the natural process by which the clouds pour out their rain upon the earth and are again filled from the sea, described as Hermes (the god of rain) stealing the cattle (clouds) of Apollo, we cannot attach to the story the idea of criminality which it at first suggests. Similar interpretations we must be prepared to seek throughout the mythologies of the Indo-Germanic races. It is vexatious to find the Olympian deities of our childhood such as Neptune, Mars, Vulcan, Juno, disappearing into Poseidon, Ares, Hephaestos, and Hera. But it cannot be helped, with a view to the rest of Europe, and Mr. Murray is never above giving both names. A number of engraved illustrations increase the value of the book, which is addressed as well to the general reader as to the higher classes of schools and art-students. The author is correct in saying that, in forming an opinion of the usefulness or otherwise of a knowledge of the ancient mythology, whatever its apparent or real shortcomings may have been, it exercised enormous influence on the education and life of at least two of the most highly-cultivated nations of the earth.

VARIORUM.

We take a paragraph from "Facts and Hints" (Cassell & Co.) about charcoal:—"Billets of any kind of wood are heaped up into piles, usually in the form of pyramids. The whole is then covered with earth, leaving an aperture at top and bottom for a current of air. The pile is now set fire to, and when completely ignited throughout, the apertures are closed, and the fire consequently smothered. In this process all the juices of the vegetable, its oil, &c., are dissipated, leaving little more than its woody fibre. It loses about three-fourths of its weight, and what remains is called charcoal. This charcoal contains, besides carbon, small quantities of different kinds of earth, and it is now supposed by some a proportion of oxygen. When charcoal is burnt, its carbon unites with the oxygen of the air and so much heat as to give it the gaseous form, and constitutes carbonic acid gas, or fixed air."——*Cassell's Magazine* for February has a paper on the Darien Canal, by Mr. W. H. White. The writer says,—"The real difficulties of this route lie in the eight miles of mountainous country between the plain of the Napipi and the Pacific. To pierce this a tunnel, or deep cutting, or a combination of tunnelling and open cutting is essential. Commander Selfridge recommends a tunnel five miles long, 120 ft. high, 70 ft. wide, and containing a depth of water of 26 ft.! This tunnel would form the summit-level of the canal, and would be 130 ft. above the sea, or 90 ft. above the junction of the Atrato and Napipi. On the eastern side it would be approached by a channel 120 ft. wide at the surface, from 90 ft. to 100 ft. wide at the bottom, and containing 26 ft of water. Deep cutting would be required for some distance from the eastern end of the tunnel, and nine locks capable of containing the largest ships, are proposed for the purpose of overcoming the rise of 90 ft. The western end of the tunnel would be 130 ft. above the Pacific, and almost close to the sea, a series of locks and basins being provided for the transfer of ships from the sea-level to the canal."——*Iron* says of the St. Gothard Tunnel:—"By the latest Swiss advices, the works for this undertaking seem to be actively pushed forward. The dimensions of the tunnel are the same as at Mont Cenis,—6·8 by 7·6 mètres; its length is 15,568½ mètres (15½ kilomètres, or about 9½ miles, ascending 220 mètres; gradient, 1 in 70), from Goschenen, on the Cisalpine, to Airolo, on the Trans-Alpine side. Progress has already been made by the contractor, M. Favre, with the headings at each end of the tunnel. The summit-level is 1,152·3 mètres or 3,780 ft. above the level of the sea."——The *Art Journal*, treating of the Fish in Ornamental Art, says,—"We cannot now presume to positively define the motives that led to the symbolic use of the fish in Christian art. It is curious that the letters of the Greek word for fish are also the initial letters of the words 'Jesus Christ, the Son of God, the Saviour,' while Tertullian and several others of the early writers suggest a fresh train of thought, since they frequently term their converts *pisciculi*, in allusion to their new life through the waters of baptism. In some instances the fish may have been rudely cut on the slab in token that the deceased was a fisherman or sailor; but as signs that clearly refer to the worldly occupations are few in number, while the fish-form is very abundant, we may, we think, very reasonably assume that in most cases, at least, it was employed as a symbol, not in the lower, but in the higher significance. In the works of the early illuminators, many examples of the use of the fish will be found, in some cases as an accessory, while at other times the flexibility of the creature is taken advantage of in the formation of entire letters: a C may be composed entirely of the fish-form, while two in combination are used to form the letter O."——With last Saturday's edition of the *Reading Mercury* were re-issued copies of that journal published February 1st, 1723, one hundred and fifty years ago. The *fac-simile* illustrates the diminutive size of newspapers a century and a half ago, the dimensions of its pages not exceeding 9 in. by 7 in. Two paragraphs in it serve to show the state of London at that time:—"*London*, January 28. On Saturday night last a clergyman was attacked in a chariot in High Holbourn, at seven in the evening, and robbed of 15*l.* besides his watch." "On Saturday night last a gentleman, in his chariot, passing the King's-road near Chelsea, four footpads suddenly rushed out of a hedge, commanding the coachman to stand; but he driving on, they fired a pistol at him, and he fell from the box, and broke his arm with the fright; whilst the footman behind discharged a blunderbuss amongst the rogues, and killed one of them on the spot; the others made their escape."

Miscellanea.

Royal Institution, Albemarle-street.—The laboratory department here, at the back of the main building, has been rebuilt under the direction of Mr. Harwood, architect, Messrs. George Smith & Co. being the contractors. The *Metropolitan* gives some particulars:—There are three floors; the lowest, the laboratory proper, devoted specially to chemical operations, with a large room, 53 ft. by 36 ft., and 15 ft. high, and a small open yard for ventilation closely adjoining, on the other side of which are small brick chambers, containing several various sets of hot-water apparatus in use for different purposes about the general structure, and fitted up some time ago, severally, by Messrs. Norris, Quarm, & Clements, Mr. Lynch White, and Mr. Perkins. The floors are all of Dennett's patent, *i.e.*, concrete, and the roof of the same material. They are carried upon cast-iron columns where required, and wrought-iron stancheons, made by Messrs. Moreland & Sons, of Old-street, and the floors and roof are of asphalte. This portion of the work has been executed by Mr. W. Wright, of Duke-street, Westminster. On the floor above is another laboratory, more particularly devoted to scientific investigations as distinguished from chemical. Clark's patent steel revolving shutters are provided to the external windows, and a skylight is protected in a similar way. On the floor above is what is called the lecture-room, about 22 ft. by 12 ft., communicating with the already existing theatre by means of a new main staircase.

Society for the Encouragement of the Fine Arts.—On Thursday evening in last week, at the Society's rooms, 9, Conduit-street, Mr. T. H. Thomas delivered a lecture—the first this season,—on Greek Art, Mr. Soloman Hart, R.A., in the chair. It was numerously attended. On the walls of the gallery were arranged some careful studies from the pencil of the lecturer of the *chefs-d'œuvre* still remaining to us of the Classic beauty of old Greece. At its conclusion, the chairman, Mr. Sadler, and Mr. George Browning made a few critical remarks.

The Improved Industrial Dwellings Company (Limited). Established 1863.—The report prepared for presentation at the nineteenth half-yearly meeting of shareholders states that "the directors recommend that the usual dividend, at the rate of 5 per cent. per annum, free of income-tax, be paid, which will absorb 3,334*l.* 13s. 1d., and leave a balance of 2,403*l.* 19s. 8½d. At 31st December, 1872, 1,268 dwellings were erected and occupied, and 262 were in course of erection. The buildings in Crabtree-row, Shoreditch, were not completed by the contractors until the end of September, and those in Ebury-square until the end of December. In both cases the applications were greatly in excess of the number of dwellings, and the buildings were at once fully tenanted. Owing to the difficulties which existed in the building trade, the directors were unable during the past year to proceed with new works; but they are now taking steps to obtain tenders for covering the two sites in Commercial-road, Whitechapel, and the dwellings will be commenced within the next few weeks. The additional site in Pimlico, offered by the Marquis of Westminster, will be taken up shortly, and the directors believe they will be able to obtain a small site in Stingo-lane, Marylebone, negotiations having been re-opened with the Metropolitan Board of Works for that purpose. The directors, therefore, hope to provide during the coming year nearly 250 additional tenements, to accommodate about 1,400 persons.

Progress shown by the Income-Tax.—The property and profits assessed to Income-tax in the United Kingdom for the year ending the 5th of April, 1871, amounted to 419,850,798*l.*, being 21,622,000*l.* more than in the preceding year. There was an increase of 20,311,000*l.* in England, and of 1,359,000*l.* in Scotland, but a decrease of 48,000*l.* in Ireland. The profits of trades and professions, public companies, railways, ironworks, gasworks, &c., assessed under Schedule D for the year 1870, yield an increase of 10,644,000*l.* in comparison with those for the year 1869—9,833,000*l.* in England, 719,000*l.* in Scotland, 42,000*l.* in Ireland. In 1853 the gross annual value assessed was 47,559,474*l.* for lands, &c., and 46,959,338*l.* for houses; in 1870, 56,540,000*l.* on lands, &c., and 82,732,000*l.* on houses. The profits charged to Income-tax in respect of "trades and professions" under Schedule D, in Great Britain, were 75,008,000*l.* in the year 1853, and 129,773,000*l.* in the year 1870–71. In order to make this comparison, a portion of the present constituents of Schedule D—viz., railways, canals, mines, &c.,—has been excluded from the figures for 1870, because it did not form part of that schedule (but of Schedule A), in 1853. A comparison of the profits assessed under those heads for the same years gives remarkable results. The net receipts from Income-tax in the year ending the 31st of March, 1872, amounted to 9,328,102*l.*—viz., 3,325,492*l.* under Schedule A, 434,903*l.* under Schedule B, 897,541*l.* under Schedule C, 4,125,324*l.* under Schedule D, and 544,842*l.* under Schedule E.

The Newington Butts Improvement and the Building of the New Churches.—A public meeting, which was held in St. Mary's School-room, on Tuesday evening, for the purpose of raising funds for the re-building of the new parish church, in place of the old church, which is to be removed for the widening of Newington, showed that, notwithstanding all difficulties in connexion with the improvement in question had been removed, its ultimate accomplishment is still a matter of uncertainty. It transpired, from what took place in the course of the discussion at the meeting on Tuesday, that the Act of Parliament under which the improvement is to be effected provides that, unless a sum, in addition to the like sum paid by the Board of Works (which is 5,000*l.*), be raised before the end of next year, the improvement cannot be accomplished, as the powers of the Board for that purpose come to an end. It was therefore urged that it was of the greatest importance that a vigorous effort should be made to raise the money on the part of the parishioners and others who are in the habit of using the thoroughfare, which is at present dangerously narrow. The meeting resulted in several large sums being subscribed, in order that such a pressing improvement may at once be carried out.

Cambridge Slade Professorship.—Mr. Sidney Colvin, M.A., of Trinity College, has been elected Slade Professor of Fine Arts at Cambridge, in succession to Sir M. Digby Wyatt.

Earthquakes. — These manifestations of physical commotion are still pretty frequent here and there throughout both the western hemisphere and the eastern, but especially in the eastern. On the 19th ult., an earthquake startled the inhabitants of Rome from their sleep. The shock was repeated two or three times. The Baron de Cosson, writing from Cairo, says that a shock of earthquake was felt by many persons there on the 12th ult. The oscillations lasted about a minute and a half. The movement resembled that experienced on a very small boat in a little chopping sea. Five hundred people have been killed by an earthquake in India. Information received at Madras stated that on the night of December 15th, a shock of earthquake took place, from the effects of which the people throughout the district safely escaped except in the town of Lehree, in Eastern Catchi and Zehri, where 500 lives have been lost from the fall of houses and walls, and only twelve persons were saved. The earthquake was also felt in the Rohree division, at Sehwan, Dadur. At Shikarpore the shocks were so much felt in the town that small articles were upset. The shocks were also felt at Jacobabad.

Great Fire at the Royal Military Academy, Woolwich.—On Saturday morning of last week, about four o'clock, a fire broke out in the Royal Military Academy at Woolwich, and before it was extinguished the large central block, known as the Clock Tower, was totally destroyed. This building was two stories in height, and measured about 90 ft. square. It contained the class-rooms for the students, the library, and other offices. All these rooms were entirely burned out. The books used for educational purposes and the papers belonging to the students were saved, but the military library was lost. It is believed that the fire arose from a flue connected wirh the hot-water apparatus for heating the building. A court of inquiry, composed of officers representing the various branches of the service at Woolwich, commenced an investigation, on Saturday, into the circumstances attending the fire. At present the evidence clearly points to the flue of the heating apparatus as the origin of the fire: and now that the mischief is done, it seems that this flue, which could never be properly swept, has been long regarded as a source of danger by many of those connected with the establishment.

Overcrowding at Workington.—The *Carlisle Journal* gives a sad account of the want of house accommodation and overcrowding at Workington. The writer says:—"The population during the last three years has increased by nearly as many thousands, owing entirely to the extensive and rapid development of the iron trade. The building of houses has not kept pace with the increase of population, and the consequence is that the value of house property has advanced upwards of 100 per cent. Some new houses have been built, but for every one erected there is half a dozen tenants. Many of the persons inhabiting such places have been taken seriously ill with rheumatic fever and other ailments, brought on by the damp and unhealthy state of the rooms in which they had taken up their abode. The most serious evil, however, with which Workington is afflicted at the present time is overcrowding. The town is literally swarming with people whose habits, under the most favourable conditions, are not conducive to health, and who are huddled together in a state of filth and misery which is positively frightful."

St. George's, Hanover-square, and its Sewer-men.—The St. George's, Hanover-square, Committee of Works have considered a report of a sub-committee, recommending that the wages of the sewer-men and the flushers should be increased. The surveyor, Mr. H. T. Tomkins, said St. James's, Westminster, paid its sewer-men 5s. per day, finding boots, a slop, and a hat; St. Luke's, Chelsea, 4s. 8d.; the Westminster District (St. Margaret and St. John) Board, 6s., finding boots; Paddington, 5s. 4d.; Hampstead, 4s., with boots; Marylebone, 4s. 6½d., with boots. As for ordinary sewer-men, St. James's paid 3s. 10d. and 4s. per day; Chelsea, 3s. 10d.; Westminster District, 3s. 10d. and 4s. 2d., with boots; Paddington, 4s., with boots; Hampstead, 3s. 6d., with boots; St. George's had one man at 3s., one man at 3s. 2d., four men at 3s. 10d., one man at 4s., and two men at 4s. 2d. per day. Mr. J. Morris moved that the sewer-men have 1s. extra per week, which he considered equal to the wear and tear of the boots. The motion was adopted.

Belfast Architectural Association.—A meeting of the Belfast Architectural Association was held on Monday evening last, at the Museum. Mr. Robert Young occupied the chair. Mr. R. Watt read a paper on "Architectural Education." The reader referred to the great want that existed for a thorough systematic training for architectural students, especially before entering an office. He suggested that, as a step in the direction of supplying this want, architecture should be recognised as well as engineering in the Queen's Colleges, and advocated the appointment of a lecturer on architecture at each college. He recommended that the Belfast Architectural Association, until something better be substituted, should take up this work in Belfast, and, as a commencement, open classes for instruction in the science and history of architecture, and offer prizes to the younger members for drawings. The Association have already a class of design meeting fortnightly, and which is largely attended.

Society of Engineers.—At the first ordinary meeting of the Society of Engineers for the present year, the president, Mr. Jabez Church, presented the premiums of books which had been awarded to the following members for papers read during the past year, viz., to Mr. E. G. Bartholomew, for papers on Electric Telegraphy; to Mr. W. H. Fox, for a paper on continuous Railway Brakes; and to Mr. H. Davey, for a paper on Milford Haven and its new pier works. The president then delivered an inaugural address in which he reviewed the progress of engineering practice during the past year, noticing in the first place the advances made in sanitary engineering, that being the branch of the profession in which his practice chiefly lay. He then proceeded to notice successively the inauguration, progress, and completion of various large and important engineering works in the metropolis, in the provinces, and abroad.

Competition Designs for the New Chester Workhouse.—A correspondent of the *Chester Chronicle*, under the signature of "Fair Play," gives some good advice. He says:—"As the designs for the new proposed workhouse have now been sent in, I would beg to suggest to the authorities that they should engage a large room, to properly exhibit the merits of each; and, if possible, after the award has been made, a public exhibition of the drawings should take place; as there will probably be forty or fifty sets of drawings, which will cost the competing architects from 50*l.* to 60*l.* each set, and these, if mounted on stretchers, as they generally are, will require an area of 150 superficial feet of wall-space to each set of designs. Also I would suggest, for the satisfaction of all parties, that a disinterested architect should be called in to assist the guardians in arriving at an ultimate decision upon the merits of those to whom premiums are to be awarded."

Fires in Churches.—A fire broke out the other day in St. Stephen's Church, Pratt-street, Camden Town. The fire was discovered by smoke issuing from the roof. Several engines were quickly on the spot, and the firemen soon extinguished the flames, but not until about 15 ft. of the roof was much damaged. The fire was supposed to have been caused while the church was being heated previously to the commencement of morning service.——Abberley Parish Church, situated about a mile and a half from Witley, Worcestershire, has been almost totally burnt down. The entire edifice was enveloped in flames when the fire was first discovered, and nothing was left standing but the tower and two of the outer walls. It is supposed that the fire was caused by the overheating of a stove. The erection of the church, which was completed in the year 1852, cost upwards of 8,000*l.* The edifice was partially insured.

A New Public Hall for Leicester.—A meeting of the members of the Leicester Literary and Philosophical Society, and other gentlemen interested in the matter, has been held in the mayor's parlour, at the town-hall, the object of which was to consider the advisability of taking steps towards the erection of a new and commodious hall in Leicester, in which public lectures and meetings can be held. It was resolved,—

"That this meeting cordially commend to public support the proposal to raise the sum of 3,000*l.* towards the expense of providing, in connexion with the museum, a large lecture-hall, and suitable accommodation for the School of Art; such sum to be offered to the corporation of Leicester, on condition that they spend an additional sum, of at least equal amount, on the accomplishment of the two objects."

Leeds, Castleford, and Pontefract Junction Railway.—The object of this Bill now before Parliament, and unopposed, is the construction of railways between Garforth, on the Leeds and Selby Line of the North-Eastern Railway, and Castleford, on the York and North-Midland Line of the same Railway, and the Pontefract and Methley Branch of the Lancashire and Yorkshire Railway at Houghton, with junctions to and power to use the North-Eastern Railway Company's Railway and Stations at Garforth and Castleford, and a branch to the navigable River Aire, in the parish of Ledsham. It is promoted by the various landowners interested and backed up by several of the large companies. If an act be obtained, it will bring into the market a considerable amount of coal, so that the public may be considered interested in the success of the scheme.

Protection of Norwich Cathedral from Fire.—Efforts are being made to minimise the damage to Norwich Cathedral should a fire unfortunately break out in any part of the building, and the chief constable, and a number of the fire brigade, with Mr. Brown, the architect to the Cathedral authorities, have conducted an experiment (under the direction and in the presence of the Dean) at the south-east side of the Cathedral, to ascertain to what height water could be thrown from the hydrant on Live's Green. It was evident that water could not be thrown to a greater height than 50 ft. or 60 ft., not sufficiently high to reach the roofs of the aisles, much less that of the nave; and steps will, it is said, be taken to put down a hydrant with shorter hose in the Palace Garden. It is also contemplated to provide hydrants at other places.

Inhabited House Duty.—The tax on inhabited houses in Great Britain was charged, in the financial year 1870-71, on 178,796 shops or warehouses, of the aggregate annual value of 9,198,808*l.*, the gross amount of the duty charged on them being 229,953*l.*; also on 68,635 beer-houses, of the annual value of 3,588,428*l.*, the amount of duty being 89,686*l.*; also on 28,167 farmhouses, of the annual value of 679,203*l.*, the duty amounting to 16,939*l.*; and also on 520,795 dwelling-houses, of the value of 27,548,687*l.*, the duty amounting to 1,032,208*l.* The total is 796,393 houses charged, their annual value being 41,015,126*l.*; and the gross amount of duty charged was 1,368,786*l.* Only houses of 20*l.* per annum and upwards are taxed.

A Grateful Architect.—A correspondent writes,—"The subscriptions in promotion of the scheme for providing a townhall for Paisley, have received a most remarkable stimulus. The sum collected amounts to about 10,500*l.*, thus leaving about 500*l.* to be raised by Mr. Clark and those gentlemen who have embarked with him in the undertaking. Mr. Clark states that a well-known architect in London, on seeing the notices in the *Glasgow Herald*, regarding the proposed hall, has, unsolicited, offered to furnish the committee with a design and plans as a contribution from one who cherishes the remembrance of many agreeable associations with the old town!"

Inventors' Institute.—On Thursday evening in last week, Mr. F. H. Varley in the chair, a paper was read by Dr. Calantarients "On a Means of Preventing Pipes or Vessels Bursting from the Effect of Frost." The theory of the invention was that as water in passing from the fluid to the solid condition expands one-twelfth its bulk, if a space were secured inside the pipe equal to the additional volume of the ice, the expansion will take the direction of this space, and fill it without producing extra tension on the pipe. An internal air-tube of india-rubber was the means proposed, and the idea met with favour in the long discussion which ensued.

Norwich Surveyorship.—The town council, after rejecting a motion for rescinding a previous resolution that the new city engineer and surveyor shall not be allowed to take private practice; also resolved, "That the salary of the surveyor be 475*l.* a year, with the same privileges as Mr. Morant enjoyed, the corporation providing an assistant-surveyor." Mr. Lake was then appointed the assistant-surveyor; and the town clerk was instructed to advertise for a surveyor.

English for Japan.—It is seriously asserted that endeavours will be made by the ruling powers of Japan to substitute for the native tongue of that country English as the best and most copious vehicle of thought.

Walsall Cottage Hospital.—The annual meeting of the subscribers to this institution has taken place at the hospital. The annual balance-sheet showed that the income for the year amounted to 1,169*l.* 17s. 3½d., and the expenditure to 700*l.* 9s. 4d. The annual report opened with congratulatory sentences on the increase of the contributions. About two-thirds of the more serious cases brought into the hospital were from accidents in connexion with mining. 208 cases had been treated during the year in the in-patient department, and 2,182 in the out-patient department.

Purchase of Railways by Government.—The *Birmingham Daily Post* gives prominence to the following announcement:—We have reason to believe that the acquisition of the railways by the State is now seriously engaging the attention of the Government; and that an investigation is in progress—conducted by a member of the Cabinet, in conjunction with one of our ablest permanent officials—to collect information necessary to enable the Government to come to a conclusion as to the opportunity and the terms of purchase. It is not improbable, we are told, that a beginning may be made next year with the Irish railways.

Clement's Inn, Strand.—The Society of Clement's Inn are forming a new roadway to their property, the value of which will be much increased by the erection of the new Law Courts, close by. Losing their old entrance they acquired from the Commissioners of Works a site for a new roadway, 25 ft. wide, which will open into the Strand, just in front of St. Clement Danes' Church. This work is now nearly done, and has been carried out by Messrs. Dove Brothers, from the design of Mr. Raphael Brandon, architect to the society. The road has a subway, containing the drains, and gas and water pipes.

The Law Courts.—According to the *Law Magazine*, the quantities being ready, builders have been invited to compete, and in a few weeks tenders will be delivered. The work is divided into two contracts, the first containing the central courts and rooms attached to them; and the other, the east wing facing Bell-yard. The builders tendering are about twenty in number. According to another statement nothing is to be done till the proposed scheme of Law Reform has been brought in.

Patent Pipes and Boilers.—The patents of Mr. T. S. Truss, C.E., of the Crown Works, Friar-street, London, for jointed pipes, coils, and boilers, are about to pass into the hands of a new company, to be named the Patent Pipe and Boiler Foundry Company (Limited), with a capital of 80,000*l.*, in 16,000 shares of 5*l.* each, of which 11,000 are offered for subscription, as appears from our advertising columns. The patents of Mr. Truss are well known. This business is an old-established one.

New Bridge over the Dwina.—The new railway-bridge over the Dwina, near Riga, is one of the most important works lately undertaken in Europe. Its length is 2,444 English feet. The undertaking was promoted by a joint-stock company, and executed under the supervision of Colonel von Struve, of the Engineers. The bridge was commenced the 22nd of May, 1871, and on the 27th of October, 1872, was so far completed that the first locomotive could run over it.

Reading Architectural and Archæological Society.—On the 22nd ult., an essay on "Stained Glass" was read by Mr. Clayton R. Rolfe, at the Athenæum. The essay gave an account of the various styles of painting in glass, and in the latter part of his paper showed the necessity existing, in the present phase of ecclesiastical art, for a greater harmony between the ornamental glass and general architecture of our churches.

Miss Susan Durant, the well-known sculptor, is dead. She was a pupil of Baron de Triquetti, and was constantly commissioned to execute works in her own peculiar line by her Majesty and other members of the Royal family. Miss Susan Durant was widely known both in London society and also in Paris, where her death has recently occurred before attaining middle life.

Burning of Court-house, Quebec.—The Court-house in this city has been destroyed by fire. All the records of the colony, the register of titles, and other deeds, together with many important historical documents, are burnt.

The New Domesday Book.—It is asserted by the *Echo* that the work is rapidly progressing under the management of the Local Government Board, at whose office half a dozen gentlemen are constantly employed upon the returns, the local operations being conducted by the clerks to the boards of guardians, who are specially paid for the labour. Can this be correct? Surely some other organisation would be necessary?

An "Amalgamated Labour Union."—A giganticas sociation, to be called the Amalgamated Labour Union, is said to be in course of formation. It is to comprise the Amalgamated Society of Railway Servants, Amalgamated Society of Lightermen and Watermen, the Labour Protection League, and the Carmen's Association, the total strength of which is estimated at 100,000. Its great object, of course, is to protect the interests of labour.

The City Flour Mills.—According to the London correspondent of the *Manchester Guardian*, the plans for rebuilding the large and so-called fireproof City Flour Mills are now complete. The estimated cost of restoring the fabric and the machinery to their original status is about 40,000*l.*, nearly the whole of which falls upon the insurance companies.

Middlesbrough.—The erection of commodious buildings for the "Erimus" Club is to be proceeded with immediately, at a cost of 2,500*l.*, from the plans of Messrs. Weatherill & Moses, architects, of Stockton-on-Tees, whose designs were selected in a limited competition. This club derives its name from the motto on the Middlesbrough coat of arms, "Erimus."

Poplar.—According to the *Daily Chronicle*, an action has been taken by Messrs. Hill, Keddell, & Waldram, contractors, against the Poplar Guardians for a sum of 800*l.* for extra work in connexion with the building of the new workhouse. It has been decided by the guardians to resist the claim.

Prospects of Barrow.—The *Barrow Herald* is informed that the Barrow Iron Shipbuilding Company have let a contract for the erection of houses on Barrow Island at a cost of 50,000*l.* If house accommodation could be supplied, work could be found for 20,000 additional men.

TENDERS

For carcass of warehouse Victoria-street, Bristol, for Mr. R. H. Symes. Mr. J. Mechelen Rogers, architect. Quantities by Messrs. Strudwick & Mennie:—

Wilkins & Son	£2,700	0	0
Davis & Son	2,400	0	0
Summers & Ford	2,267	0	0
Stephens	2,221	0	0
Humphreys	2,208	0	0
Storkey & Veale	2,100	0	0
Howell	2,020	0	0

For the erection of St. Mark's Church, East-street, Walworth, Surrey. Messrs. Henry Jarvis & Son, architects:—

Adamson & Sons	£5,740	0	0
Shepherd	5,700	0	0
Myers & Sons	5,675	0	0
Downs & Co.	5,390	0	0
Dove, Brothers	5,345	0	0
Henshaw & Co.	5,320	0	0
Colls & Sons	5,260	0	0
Tarrant	5,148	0	0
Marsland & Sons	5,131	0	0
Thompson	4,778	0	0

For schools at the Monnow-road, Fort-road, Southwark, for the London School Board. Mr. Rowland Plumbe, architect. Quantities supplied by Mr. L. C. Riddett:—

Sheffield	£8,956	0	0
Cook	8,750	0	0
Marsland & Sons	8,500	0	0
Scrivener & White	8,312	0	0
Wells, jun.	8,150	0	0
Cooke & Green	8,041	0	0
Gammon & Sons	7,999	0	0
Jerrard	7,987	0	0
Shepherd	7,950	0	0
Higgs	7,923	0	0
Kilby	7,760	0	0

For alterations to the Britannia Tavern, Kingsland-road, for Mr. M. Ullmer. Mr. E. Brown, architect:—

Marr	£409	0	0
Sanders	425	0	0
Christoffer, Bros.	413	0	0
Pringle	404	10	0
Blackmore & Morley	387	0	0
Ferne	345	0	0

For new shop-front and fittings, sundry alterations, and repairs at No. 138, High-street, Clapham, for Messrs. Powell & Blunden. Messrs. J. & A. E. Bull, architects. Quantities supplied:—

Pearce	£309	0	0
McLachlan	298	0	0
Nightingale	288	0	0
Thorpe & Son	267	0	0

For schools at Hughes's Field, Greenwich, for the London School Board. Mr. E. R. Robson, architect. Quantities supplied by Mr. H. T. Northcroft, Son, & Neighbour:—

Higgs	£6,543	0	0
J. & H. Coleman	6,389	0	0
Perry & Co.	6,275	0	0
Cooke & Green	6,269	0	0
Jerrard	5,974	0	0
Johnson	5,950	0	0
Cooper	5,850	0	0

For the erection of school and residence, for the Llanaelhaiarn School Board, Carnarvonshire. Mr. Walter W. Thomas, architect:—

H. Jones	£1,090	0	0?
W. Jones	650	0	0
Roberts (accepted)	550	0	0?

TO CORRESPONDENTS.

G. E. (asylum about to be built at cost of Mr. Holloway, at Virginia Water, is not commenced. We understand that the working drawings are being made, with view to obtaining tenders).—Mr. K. (next week).—F. R. M. (next week).—A Joiner (next week).—G. H. (illustration was not published. A description has been given).—J. V.—J. R. G.—C. & Co.—H. B. W.—H. & R.—P.—Sir G. D.—M. R.—J. H.—H. T.—T. R. S.—T. M.—W. & M.—T. L. D.—R. Y.—W.—T. C.—F. W.—W. R. C.—J. F. C.—T. & Son.—J. G.—H. A.

We are compelled to decline pointing out books and giving addresses.

All statements of facts, lists of tenders, &c., must be accompanied by the name and address of the sender, not necessarily for publication.

NOTE.—The responsibility of signed articles, and papers read at public meetings, rests of course with the authors.

NOTICE TO SUBSCRIBERS.

Subscribers within the United Kingdom can be supplied with THE BUILDER *direct from the Office at the rate of Nineteen Shillings per annum,* PAYABLE IN ADVANCE.

The Publisher cannot be responsible for TESTIMONIALS *left at the Office in reply to Advertisements, and strongly recommends that* COPIES ONLY *should be sent.*

Advertisements cannot be received for the current week's issue later than **THREE o'clock p.m.** *on THURSDAY.*

Bath and other Building Stones of Best Quality.—RANDELL, SAUNDERS, & CO. Limited, Quarrymen and Stone Merchants. List of Prices at the Quarries and Depôts, also Cost of Transit to any part of the United Kingdom furnished on application to Bath Stone Office, Corsham, Wilts.—[ADVT.]

Ashton & Green, Slate, Iron, and Marble Merchants, and Quarry Agents.—Roofing Slates,—Bangor, Blue, Red, and Green; Blue Portmadoc; and Whitland Abbey Green. The new "Permanent" Green, weight the same as Bangor, and uniformity of cleavage equal. Marble and Enamelled Slate Chimneypieces, Inscription Tablets, &c. Stoves, Ranges, and Builders' Ironmongery. A. & G.'s special Red Ridge Tiles. Large show of all goods at 14 and 15, Bury-street, St. Mary-Axe, London, E.C. Drawings and prices upon application accompanying trade card.—[ADVT.]

Bills of Quantities, Specifications, &c., Lithographed by ROBT. J. COOK & HAMMOND, 29, Charing-cross, S.W., with accuracy and punctuality. Plans and Drawings Copied, Traced, or Lithographed.—[ADVT.]

J. L. BACON & CO.
MANUFACTURERS OF
IMPROVED HOT-WATER APPARATUS,
FOR WARMING AND VENTILATING
Private Houses, Churches, Schools, Hospitals, Manufactories, Greenhouses, &c.
OFFICES AND SHOW-ROOMS:—
476, NEW OXFORD STREET, London, W.C.
From FARRINGDON ROAD.
Publishers of a Pamphlet on "Hot-Water Heating."

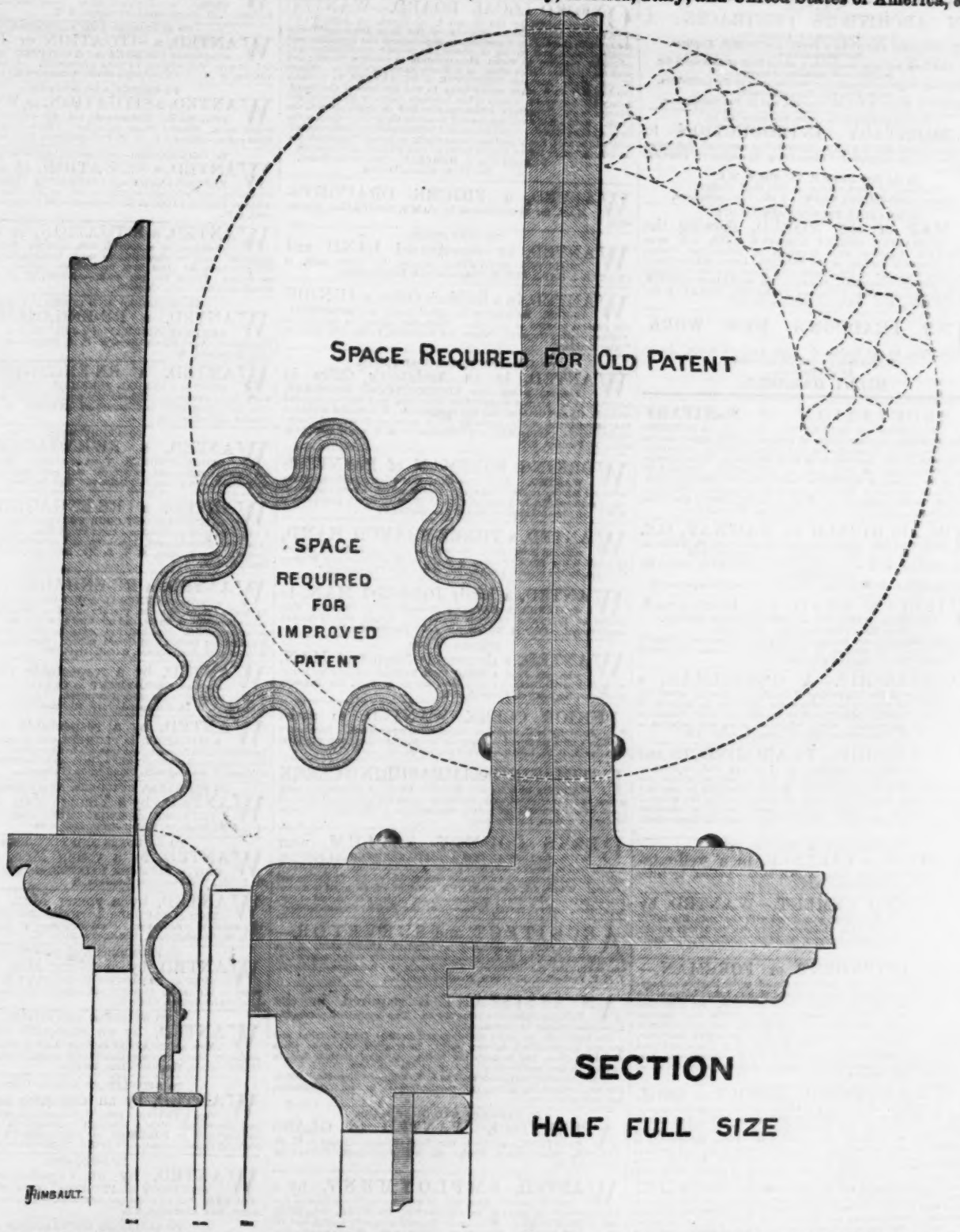
CAST-IRON
COLUMNS, Stancheons, and GIRDERS,
at a DAY'S NOTICE, QUALITY & FINISH UNSURPASSED.
ORR & M'LEAN,
UNION FOUNDRY, 124, GOLDEN LANE, E.C.
Rain-pipe, Gutter, Stove, Range, and Nail
WAREHOUSE, 84, HATTON GARDEN, E.C.
Catalogue, price 2s. 6d. deducted from first order. Estimates free.

CLARK & COMPANY'S

SELF-COILING

NOISELESS REVOLVING STEEL SHUTTERS.

New Patents Granted May 2, 1872, for Great Britain, France, Germany, Austria, Italy, and United States of America, &c.



PRINCIPAL CONTRACTS SUCCESSFULLY FITTED WITH THESE SHUTTERS are—

300 ENTRANCES. } VIENNA EXHIBITION. { 30,000. SUPER. FEET.	NEW POST-OFFICE, CAIRO.
TELEGRAPH OFFICE, CAIRO.	NEW POST-OFFICE, CAPE TOWN.
NEW POST-OFFICE CONSTANTINOPLE.	NEW POST-OFFICE, SYDNEY.
PUBLIC BUILDINGS, CALCUTTA.	COMPAGNIE DE FIVES, LILLE.

LONDON—Rathbone-place, Oxford-street; **BOSTON** (U.S.)—10, Pemberton-square; **DUBLIN**—25, Westmoreland-street;
PARIS—Rue Notre Dame des Victoires, 26; **MANCHESTER**—22, Victoria-street; **EDINBURGH**—68, Rose-street-lane;
VIENNA—Karnthner Strasse, No. 8; **LIVERPOOL**—87, Lord-street.

Recently published in 8vo. price 18s.

A TREATISE ON BUILDING & ORNAMENTAL STONES OF GREAT BRITAIN & FOREIGN COUNTRIES.

Arranged according to their Geological Distributions and Mineral Characters. With Illustrations of their Application in Ancient and Modern Structures.

By EDWARD HULL, M.A. F.R.S. Professor of Geology in the Royal College of Science, Dublin.

"Mr. Hull's work deserves and is likely to be welcomed in every architect's library. There is nothing about palæontology in it, and there is no more mineralogy introduced than is absolutely necessary. A practical man who may be acquainted with the working and use of stone, but ignorant of geology as a science, need have no fear of not being able to follow the author, but will find instruction and entertainment in every page."—*Architect.*

MACMILLAN & CO. LONDON.

PERFECTION in BOOKKEEPING.—Builders and Others desiring a really good system, can have SET of MODELS for BUILDER'S BOOKS, by DOUBLE ENTRY, to which was awarded the prize offered in "The Builder," No. 1,180, and which has been adopted by many large firms. Also a Modified Arrangement by Single Entry, suitable for small builders.—Address, E. A. 4, St. George's-road, Regent's Park, London.

In the Press.

ON ARCHITECTS' CONTRACTS: A Legal Handbook for Architects.

By EDWARD JENKINS & JOHN RAYMOND, Esquires, Barristers-at-Law.

*** This Book will also constitute a useful Book of Reference for Builders and Building Owners.

Orders may be given through any bookseller or to the publishers.

Price, Five Shillings, post-paid.

HENRY S. KING & CO. 65, Cornhill, and 12, Paternoster-row.

Lately published, in crown 8vo. price 10s. 6d.

ELEMENTARY INTRODUCTION to PRACTICAL MECHANICS, illustrated by numerous Examples. Being the Fourth Edition of "Elementary Examples in Practical Mechanics."

By the Rev. JOHN F. TWISDEN, M.A.

Professor of Mathematics in the Staff College.

London: LONGMANS, GREEN, & CO. Paternoster-row.

SUBMARINE TELEGRAPHY IN 1873.

A MAP of the WORLD, showing the SUBMARINE CABLES ALREADY LAID, and those PROJECTED, together with Drawings of Submarine Cables, a list of Telegraph Stations of the Submarine Lines, and two Specimens of the Language of Telegraphy—the Morse System of Signals and Sir William Thompson's Recorder. By WILLIAM ABBOTT, Stock Exchange.—London: Published by BATES, HENDY, & CO. No. 4, Old Jewry, E.C. Price 1s.; post-free, 1s. 1d.

MISS BRADDON'S NEW WORK.

The New Work, by the Author of "Lady Audley's Secret," &c. on WEDNESDAY NEXT, in 3 vols.

At all Libraries.

MILLY DARRELL.

ASSOCIATION of SANITARY ENGINEERS and SURVEYORS.—NOTICE.—A MEETING of Civil Engineers and Surveyors, at present holding appointments under Corporations, Local Boards, and other sanitary authorities, will be held at the Institution of Civil Engineers, Great George-street, Westminster, at TWO p.m. on SATURDAY, FEBRUARY 15th, for the purpose of FORMING the PROPOSED ASSOCIATION, and for the discussion of other matters of importance.—Communications may, in the meantime, be addressed to Mr. LEWIS ANGELL, C.E. 12, Dartmouth-street, Great Queen-street, Westminster.

MR. ARCHIBALD D. DAWNAY, C.E. CONSULTING ENGINEER and SURVEYOR, 25, Walbrook. CALCULATIONS, DESIGNS, and ESTIMATES PREPARED for IRON GIRDERS, ROOFS, COLUMNS, BRIDGES, GASWORKS, &c.

LEVELLING & SURVEYING. Professional Assistance generally.

WILLIAM READ, 437, Brixton-road, GRAINER, MARBLER, and DECORATIVE ARTIST. Prize Medals awarded, 1851, 1862, 1870.

Graining, Marbling, and Decorative Work undertaken and promptly executed, in Town or country, on most moderate terms. Specimens at the Crystal Palace, near the High-level Station.

PARTNERSHIP.—A GENTLEMAN, a Graduate of the University of Cambridge, having served his time first in the country and afterwards in Town, is desirous of Entering into PARTNERSHIP with an Architect of good reputation and practice in the country. Good references given and required.—Address, E. T. W. Universities Club, 71, Jermyn-street, S.W.

PARTNERSHIP.—To ARCHITECTS and SURVEYORS.—A Gentleman, of energy and experience, thoroughly versed in every branch of the profession, wishes for PARTNERSHIP in a good practice. Would be willing to associate himself for some time, with a view to partnership in the event of mutual suitability. A liberal premium would be given.—Address (under cypher if preferred) to ARCHITECT, Deacon's, Leadenhall-street, E.C.

TO STONE AND MARBLE MASONS.

WANTED, a PARTNER, in a well-esta- blished Business, doing a good trade.—Address, by letter only, to J. R. WILLIS, Builder, Erith.

PORTLAND CEMENT.—WANTED by a Gentleman thoroughly acquainted with the trade, the SOLE AGENCY for BERLIN of a wholesale house dealing in this article. Highest references given.—Address, H. KIRSCHNER, 24, Alexander Strasse, Berlin.

SUPERINTENDENT or FOREMAN.—WANTED, in a large Gasworks abroad, under English management, an experienced and steady practical Man to Take Charge of the Gasworks as SUPERINTENDENT or FOREMAN. He must thoroughly understand the manufacture of gas on the most modern system, the working and setting of clay retorts, and be practically acquainted with the entire machinery of an extensive Gasworks. Applicants to state their age, whether married or single, and give full details and particulars as to present and past engagements. Testimonials need not at present be forwarded.—Address, in first instance, F. LESLIE, Esq. Moscow, Russia.

CITY of NORWICH.—NOTICE to ENGI- NEERS, SURVEYORS, and ARCHITECTS.—Any Person desirous of obtaining the APPOINTMENT to the OFFICE of ENGINEER, SURVEYOR, and INSPECTOR of NUISANCES to the Corporation of Norwich, are requested to forward testimonials of qualification and competency, with particulars of age and previous occupation, addressed to the Town Clerk, Guildhall, Norwich, before ELEVEN o'clock on FRIDAY, the 14th day of FEBRUARY next. As the duties of such Engineer, Surveyor, and Inspector will comprise the Municipal as well as the Sanitary and Burials Board business of the Corporation, a candidate must possess a practical acquaintance with the ordinary works connected with engineering, drainage, sewerage, road-making, and street-paving; also to be competent to conduct surveys and levels, prepare plans of estates, buildings, and the necessary drawings and estimates of works of every description, and to take charge of the sewage pumping-station at Trowse, and the delivery of the sewage to the Corporation farms, and take all levels required on the lands for the utilisation thereof, and he will be held responsible for the due execution thereof, as well as any other works which may fall within the duties of an Engineer, Surveyor, Architect, or Inspector of Nuisances, under or in respect of the Municipal Corporations Act, the Sanitary Acts, and the City of Norwich Act, 1867, or any of them, or the bye-laws made in pursuance thereof, with the exception of Inspector of Markets, Provisions, Hackney Carriages, Common Lodging-houses, the Impounding of Stray Cattle, and the Supervision of Street Obstructions. The person appointed will not be allowed to take private practice, but may take consulting practice with the consent of the Executive Committee. The Corporation will provide Offices, Coals, Gas, and Cleaning, and an Assistant Surveyor and Draughtsman, and an Assistant Sanitary Inspector, who are to act under the direction of the person appointed. The salary will be £750. per annum, from which the Surveyor is to provide, except as above mentioned, all assistance as may be required in order to carry out the duties appertaining to the Offices, to the satisfaction of the Corporation, and the several Committees thereof.—By order,

W. L. MENDHAM, Town Clerk.

Guildhall, January 23rd,

BOROUGH of READING.—WANTED, for about 12 Months, in the Office of the Borough Surveyor and Waterworks Manager, a properly-qualified ASSISTANT. Salary 80l. per annum. Applications, with testimonials, to be addressed to me, and delivered not later than WEDNESDAY, the 12th FEBRUARY next.

ALBERT W. PARRY, Borough Surveyor, &c.

No. 6, Abbot's-walk, Reading, January 28th, 1873.

OXFORD LOCAL BOARD.—WANTED immediately, by the Oxford Local Board, an ASSISTANT SURVEYOR during the construction of the Main Drainage Works. He must be thoroughly competent to superintend the formation and repair of roads, and paving of streets; to prepare specifications and estimates, measure up works, keep accounts in relation thereto, and perform all other duties usual in a Town Surveyor's Office. Salary 3l. per week. Also, an INSPECTOR of NUISANCES, to perform the duties of such office as set forth in the bye-laws of the Board. Salary 30s. per week. Copies of the bye-laws specially regulating the Surveyor's and Inspector's duties, may be had on application to the Clerk. Both officers will be expected to devote their whole time to the service of the Board. Applications and testimonials for both appointments to be sent, free of postage, to the Clerk, endorsed "Applications for Offices," on or before WEDNESDAY, 19th FEBRUARY instant.

FREDERICK J. MORRELL, Clerk to the Board, No. 1a, St. Giles's, Oxford.

WANTED, a FIGURE DRAUGHTS- MAN, for Stained Glass, by CAMM, BROTHERS, Smethwick.

TO SURVEYORS.

WANTED, an experienced LAND and BUILDING SURVEYOR.—Apply, by letter only, to CLARKE & BARROWS, 38, Cannon-street, Birmingham.

WANTED, in a Builder's Office, a JUNIOR CLERK. He must write a good hand, and accustomed to the general routine of the office. First-class references required.—Address, stating wages and where last employed, to No. 723, Office of "The Builder."

TO ARCHITECTURAL ASSISTANTS.

WANTED, in an Architect's Office in London, a first-class ARCHITECTURAL ASSISTANT, accustomed to prepare competition drawings, and well acquainted with Classic and Gothic detail and perspective. To a skilful Assistant the engagement would probably be a permanent one.—Address, stating terms, qualifications, and references, to K. Z. care of Houghton & Co. 30, Poultry, E.C.

WORKING FOREMAN of PAINTERS WANTED. Must have filled a similar situation, where reference can be made.—State age, qualifications, where employed, wages required, &c. by letter only, to C. 27, High-street, Hampstead, N.W. No personal application can be attended to.

WANTED, a THREE-BRANCH HAND, who can hang paper. He will be required to do the repairs of small house property; also, a MAN, to Hang Paper and Whiten Ceilings, by the piece.—Address, 782, Office of "The Builder."

WANTED, a handy JOBBING MAN, to do GENERAL REPAIRS of small House Property. Carpenter or Bricklayer by trade preferred. Wages 30s. Constant employment.—Address, No. 736, Office of "The Builder."

TIMBER TRADE.

WANTED, a thoroughly competent MAN, who can Push a Retail Cash Business.—Apply by letter, with full particulars, stating salary, &c. to A. B. C. Mr. Drewett, Stationer, High-street, Borough, S.E.

JUNIOR CLERK WANTED, to assist generally with book-keeping and correspondence. One from a Builder's office preferred.—Apply by letter, stating age and qualifications, to A. B. 28, Bishop's-road, Paddington, W.

ESTIMATING and MEASURING CLERK WANTED, by a London Building Firm. A thoroughly competent and experienced man required.—Address, with particulars of previous engagements and salary required, to L. M. care of Messrs. Waterlow & Sons, London-wall.

BERKS COUNTY ASYLUM, near Wallingford.—WANTED, a good CARPENTER and JOINER, accustomed to bench-work, fixing, and general jobbing. A preference will be given to a man who also possesses some knowledge of painting and glazing. Wages, 26s. per week, with constant employment to a competent person.—Letters of application, containing a statement of age, experience, and references, to be sent to the Medical Superintendent.

ARCHITECT and SURVEYOR.— WANTED, immediately, a JUNIOR ASSISTANT. A fair draughtsman and up in designing schools, country villas, measuring, and taking out quantities, &c. State terms and reference.—Address, J. E. P. Post-office, Newtown, Montgomeryshire.

AN ASSISTANT is required in the Building Office on a large Estate. To a competent person the appointment may be permanent.

The duties are to make drawings and tracings from sketches, and prepare specifications for new works; to measure and make plans of old buildings, and to keep the books. A junior clerk is kept to assist with the bookkeeping. Salary, 1l. 15s. per week.

Apply, by letter only, addressed to L. J. "Prescot Reporter" Office, Prescot, Lancashire, giving full particulars as to last employment, age, and references.

TO PARENTS AND GUARDIANS.

APPRENTICE WANTED to GLASS PAINTING, and also to Frst Lead Glazing.—Apply to W. M. PEPPER, Stained Glass Works, 63, Whitfield-street, Tottenham-court-road, W.

WANTED, EMPLOYMENT, by a general, handy Man, who is well up in house repairs and jobbing work in general, as PLUMBER, PAINTER, GLAZIER, and ZINC-WORKER. Will make himself generally useful, and fill up time in anything required in jobbing work. Wages no object.—Address, J. HART, 42a, Gloucester-place, Marylebone-road, N.W.

TO BUILDERS OR ARCHITECTS.

WANTED, EMPLOYMENT as CLERK or DRAUGHTSMAN for above. Five years with a large Builder, who has lately died. Acquainted with prime cost and general builders' accounts, neat draughtsman, and rapid tracer. Has also a knowledge of French. Aged 20. Salary to commence 22s. per week.—Address, DESCHAPPELLES, 10, Clough-lane, Lynn.

TO ARCHITECTS AND SURVEYORS.

WANTED, an ENGAGEMENT, as Junior ASSISTANT, temporary or otherwise. Four years' experience. Aged 21. Good references.—Address, No. 773, Office of "The Builder."

WANTED, an ENGAGEMENT, on a Portland stone job (London District) as CLERK, to assist the foreman of works, by the Advertiser, who has recently filled a similar situation, on a church job. Occupation, not salary, the desideratum. First-class references.—Address, W. D. Post-office, Camberwell-green.

TO ARCHITECTS, SURVEYORS, AND BUILDERS.

WANTED, an ENGAGEMENT, temporary or occasionally, in Town or country, by a first-class QUANTITY-TAKER, MEASURER, and DRAUGHTSMAN. Well versed in dilapidations. Twelve years' experience. Highest references. Terms moderate.—Address, R. P. 194, Gray's-inn-road, W.C.

WANTED, a SITUATION as JUNIOR CLERK, in a Builder's Office. Good references. Age 22.—Address, J. 31, South-street, Brompton, S.W.

TO BUILDERS AND PLUMBERS.

WANTED, a SITUATION or JOB by an experienced PLUMBER and GASFITTER, well up to baths and pumps, and willing to take piece-work. Good reference.—Address, W. R. 21, Chumbleigh-street, Albany-road, Camberwell.

TO SMITHS AND OTHERS.

WANTED, a SITUATION, as WORKING FOREMAN. Understands hot and cold water, bath and steam work. Twelve years' character. Filled a similar situation eight years.—Address, C. D. 17, Turner-square, Hoxton, N.

TO DECORATORS, BUILDERS, AND OTHERS.

WANTED, a SITUATION, by a first-class PAPER-HANGER and DECORATOR. Used to all kinds of decorating and gilding; willing to fill up his time at painting.—Address, DECORATOR, at Mr. Robinson's, 88, College-street, Fulham-road, S.W.

WANTED, a SITUATION, in a building business, by a married Man, aged 30. Fourteen years' experience. Used to measuring up work, bookkeeping, estimating for dilapidations, &c. Has been in business. Good testimonials and references. Terms, 30s. per week.—Address, W. J. P. 57, Church-street, near Old Town, Croydon.

TO BUILDERS AND CONTRACTORS.

WANTED, a RE-ENGAGEMENT, as GENERAL FOREMAN of a JOB. Well up in all branches. Carpenter. Aged 46.—Address, H. F. 28, Clayton-street, Caledonian-road, Islington, N.

WANTED, a RE-ENGAGEMENT as SHOP or GENERAL FOREMAN. Well up in setting out work from drawings. Thoroughly practical and energetic. First-class references from last employers.—Address, A. B. 5, Sussex-terrace, Barnsbury, N.

TO ARCHITECTS.

WANTED, a RE-ENGAGEMENT, as CLERK of WORKS. Town or country. Will be disengaged next week. References to present and past employers, with good testimonials.—Address, 747, Office of "The Builder."

WANTED, a RE-ENGAGEMENT, as GENERAL or OUT-DOOR FOREMAN, or entire Charge of a Job, by a good practical and experienced Man. Carpenter by trade. Is a good draughtsman, measurer, and at setting out work. Testimonials, &c.—Address, X. Y. Z. Mr. Bishopp's, 16, Churton-street, Pimlico, S.W.

WANTED, a RE-ENGAGEMENT, by an experienced GENERAL or OUT-DOOR FOREMAN. Joiner by trade. Aged 36. Can prepare drawings, details, specifications, take quantities, estimate, and measure up works, keep prime-cost and general accounts. Has had five years' general management. Prize Medalist for Design. Moderate salary. Good reference.—Address, A. C. No. 21. James-street, Oxford-street, W.

WANTED, by a respectable young Man, constant EMPLOYMENT as CARPENTER and JOINER. Willing to assist in the office if required. Aged 25. Town preferred. Address, A. B. 14, Richmond-grove, Richmond-road, Barnsbury, N.

WANTED, by a respectable young Man, a SITUATION, as PLUMBER and GASFITTER. Can do lacquering and bronzing, can turn his hand to quarry and sash glazing, and painting, if required; willing to make himself generally useful.—Address, T. SARGESON, Plumber, &c. Yarmouth.

TO PLUMBERS, BUILDERS, AND DECORATORS.

WANTED, by a Young Man, a first-class PLUMBER, an ENGAGEMENT.—Address, PLUMBER, care of Mr. Scott, 11, Endell-street, Long-acre.

TO BUILDERS AND PLUMBERS.

WANTED, by a young Man, a SITUA- TION, as PLUMBER, PAINTER, and GLAZIER.—Address, H. B. 22a, Walcot-square, Lambeth, S.

WANTED, by a young Man, a SITUA- TION as PLUMBER or THREE-BRANCH HAND. Is a tidy out-door zincworker. Good references if required.—Address, G. L. 21, Lonsdale-road, Kensington Park, W.

TO PLUMBERS AND BUILDERS.

WANTED, by a young Man, a SITUA- TION as IMPROVER to the PLUMBING. Been seven years in the trade. Country not objected to.—Address, W. J. 31, Little Orford-street, Chelsea.

TO BUILDERS AND OTHERS.

WANTED, by an energetic and practical Man, a SITUATION as FOREMAN or CLERK of WORKS. Joiner by trade. Unexceptionable references.—Address, G. V. 6, Bythorne-terrace, Shepherd's-lane, Brixton.

TO DECORATORS AND BUILDERS.

WANTED, by an energetic and practical Man, with twenty years' first-class experience in the painting and decorating, with a thorough knowledge of general repairs, a SITUATION as FOREMAN or MANAGER in a decorative and building establishment.—FRANKS, 12, Morton-street, Pimlico, S.W.

TO BUILDERS.

WANTED, by an experienced Hand, a SITUATION as PLUMBER, GASFITTER, and ZINC-WORKER. Well up to old and new work.—Address, T. F. 6, Theobald-street, New Kent-road, S.E.

TO BUILDERS, CONTRACTORS, &c.

WANTED, by a steady, industrious Man, a SITUATION, to WORK a SAW-BENCH FRAME, Moulding Machine, or Saw Sharpener.—Address, S. M. 1, Gordon-street, Islington, N.

TO MASTER PLUMBERS, BUILDERS, AND OTHERS.

WANTED, by a steady Man, a JOB, or Constant Place, as PLUMBER, or Three-branch Hand. Can do plain zinc work. Town or country.—Address, A. P. No. 5, Hope-terrace, Cornwall-road, Brixton-hill, Surrey.

TO BUILDERS AND FOREMEN.

WANTED, by a CARPENTER and JOINER, who has served his apprenticeship, a YEAR or SIX MONTHS in a good SHOP. A premium paid.—Address, No. 789, Office of "The Builder."

WANTED, a BERTH, by a young Man, aged 21, as CLERK, in a Builder's Office. A carpenter by trade. Wages 22s. per week. London preferred.—Address, 13. Post-office, Kingsland-green, N.